OPERATOR'S MANUAL

OM-T29934
ISSUE G8

JOHN DEERE

JD 440 SERIES-A

SKIDDERS (78100-UP)

TO THE OPERATOR

This manual contains information needed to obtain maximum results from your JD440 Series-A Skidder. Included are instructions for operating, lubricating, and servicing the unit to obtain a long operating life. This information supplements in detail those instructions discussed by your dealer at the time your skidder was delivered. Read this manual, follow the instructions provided, and refer to it for information when needed.

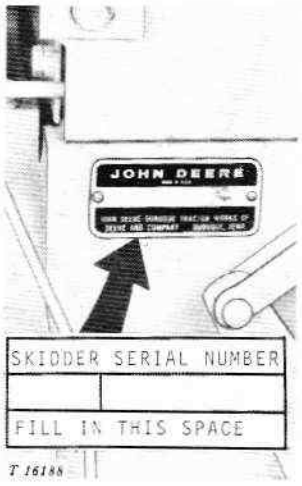
If you find you need information not covered in this manual, or if your skidder requires special servicing, take advantage of the facilities offered by your John Deere Industrial Dealer. His trained servicemen can give you prompt "know-how" services in the field or in the shop.

Your skidder may be equipped with either a Power Shift or Syncro-Range transmission. Where operating or servicing instructions vary between transmission types, the heading "Power Shift" or "Syncro-Range" is used to identify the correct operating information for your skidder.

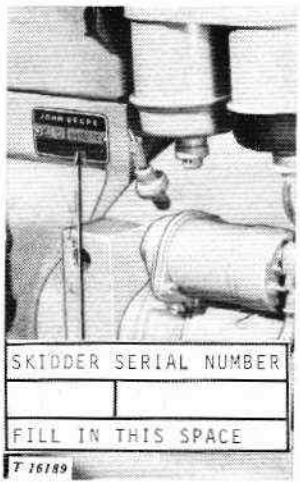
Information concerning the warranty on this equipment will be found on the inside back cover of this manual and in your copy of the delivery receipt which you should have received from your dealer when the equipment was delivered to you.

Serial numbers specifically identify your skidder. Record these numbers in the space provided and refer to them when discussing future parts or service requirements with your John Deere dealer.

When the terms "right" or "left" are used, they are determined from a position in the operator's station.

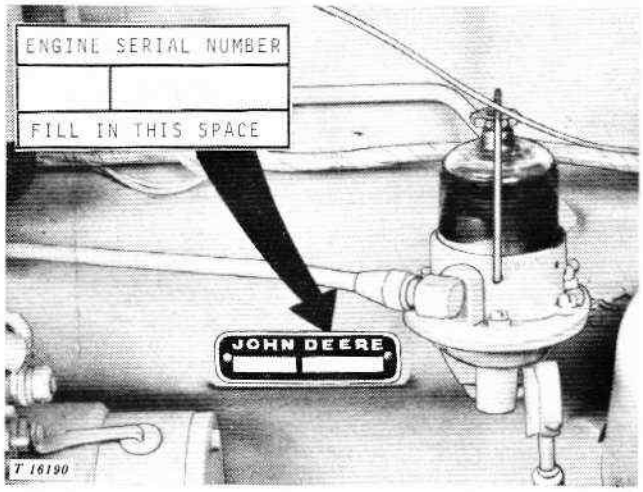


Power Shift

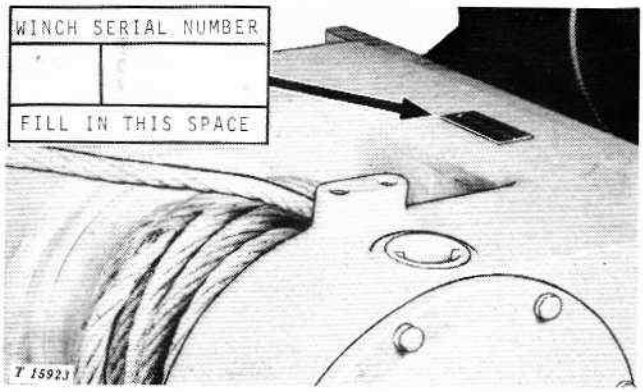


Syncro-Range

Skidder Serial Number



Engine Serial Number



Winch Serial Number

Price $1.60

CONTENTS

SPECIFICATIONS 2

OPERATION. 4

SAFETY RULES 25

FUEL AND LUBRICANTS. 26

LUBRICATION AND PERIODIC SERVICE 28

SERVICE. 45

STORAGE 57

TROUBLE SHOOTING 58

INDEX. 60

T 16191

JD440 Series - A Skidder (With Syncro-Range Transmission)

(JD440 Series-A Skidder with Power Shift transmission is shown on front cover of this manual.)

SPECIFICATIONS

ENGINE

Fuel type	Diesel
Flywheel horsepower at 2500 rpm (observed)	70.0
Maximum torque (ft-lbs) (at 1500 rpm)	173.0
N.A.C.C. or A.M.A. horsepower rating for tax purposes	25.86
Number of cylinders	4
Bore and stroke (inches)	4.02 x 4.33
Displacement (cubic inches)	219.0
Compression ratio	16.3 to 1
Firing order	1-3-4-2
Intake valve clearance	0.014-in.
Exhaust valve clearance	0.018-in.
Slow idle (rpm)	800
Fast idle (rpm)	2660
Working speed range (rpm)	1500 to 2500

ELECTRICAL SYSTEM

Battery voltage (nominal)	12 volts
Battery specific gravity at full charge (corrected to 80° F.)	1.260 (0.010)
Battery terminal grounded	negative
Alternator regulation	voltage regulator

SYNCRO-RANGE TRANSMISSION

Type - Constant mesh with 8 forward and 4 reverse speeds and 4 shift stations. Synchronized shifting within stations except reverse gears.

Clutch - 12-inch, dry-disk, feramic-faced, foot operated.

POWER SHIFT TRANSMISSION

Type - Planetary gears, hydraulically actuated wet disk clutches and brakes. 8 forward and 4 reverse speeds hydraulically shifted and controlled by a single lever.

Disconnect Clutch - 12-inch, dry-type clutch operated by a hand disconnect lever.

DIFFERENTIALS

Front - Full differential with hydraulic lock

Rear - Solid axle with no differential action

- Full differential with hydraulic lock (skidders with Power Shift)
- Full differential without hydraulic lock

DRIVE AXLES

Four wheel drive with planetary gears on all axles.

Oscillating front axle, fixed rear axle.

TRAVEL SPEEDS (In Miles Per Hour)

NOTE: Travel speeds shown are based on 16.9 x 30 tires and zero slippage.

	1500 RPM		2500 RPM	
GEAR	Syncro-Range	Power Shift	Syncro-Range	Power Shift
1	1.3	0.9	2.0	1.5
2	2.1	1.3	3.1	2.2
3	2.7	2.0	4.0	3.4
4	3.5	2.6	5.2	4.4
5	4.3	3.4	6.4	5.7
6	5.7	4.4	8.5	7.3
7	7.1	5.8	10.6	9.7
8	11.7	9.6	17.4	16.1
1st Reverse	1.3	1.1	2.0	1.8
2nd Reverse	2.1	1.5	3.1	2.5
3rd Reverse	3.5	2.3	5.2	3.9
4th Reverse	5.7	3.0	8.5	5.1

WHEEL TREADS

Tire Size	Syncro-Range	Power Shift with short frame	Power Shift with long frame
14.9 x 28	63 or 73 in.	65 or 75 in.	--------
16.9 x 30	64 or 72 in.	66 or 74 in.	78 in.
18.4 x 26	61 or 75 in.	73.5 in.	75.5 in.
18.4 x 34	----------	----------	76.5 in.
23.1 x 26	----------	----------	84 in.

TIRES (Front and Rear)

14.9 x 28 in.	8 ply (short frame only)
16.9 x 30 in.	8 ply
18.4 x 26 in.	10 ply
18.4 x 34 in.	10 ply (long frame only)
23.1 x 26 in.	10 ply (long frame only)

HYDRAULIC SYSTEM

Type . . . Closed center, constant pressure system. Includes power steering, power brakes, differential locks, front blade, and remote functions.

Standby oil pressure	2250 psi
Hydraulic pump	28 gpm at 2500 engine rpm (2000 psi)

BRAKES

Syncro-Range. . . Hydraulically operated disk type on output shaft with mechanical safety device for parking and winching.

Power Shift . . . . Axle-mounted single disk brakes hydraulically operated with single pedal control. Mechanical winching brake for parking and winching.

WINCH

Drum speed (at 2200 rpm engine speed). . . . . 58-1/2 rpm
Drum diameter. . . . . 6 in.
Drum capacities*
(with 1/2-inch cable). . . . . 185 ft.
(with 5/8-inch cable). . . . . 115 ft.
(with 3/4-inch cable). . . . . 90 ft.
Cable speed (at 2200 rpm engine speed using 5/8-inch cable) (with bare drum). . . . . 100 fpm
(with full drum). . . . . 159 fpm
Cable pull (at 2200 rpm engine speed) (calculated)
(with bare drum). . . . . 17,300 lbs.
(with full drum). . . . . 10,800 lbs.

*Calculated capacities - allowance must be made for loose or uneven spooling.

STEERING

Full power steering controlled by steering wheel. Frame-steered by two hydraulic cylinders.

FRONT BLADE

	Syncro-Range	Power Shift
Width	72 in.	72 in.
Height	20 in.	20 in.
Lift (max.)	58-1/2 in.	60-7/8 in.
Drop below ground level	9-3/4 in.	12 in.

CAPACITIES (U.S. Standard Measures)

Fuel tank. . . . . 24 gals.
(Power Shift with long frame). . . . 42 gals.
Cooling system. . . . . 4 gals.
Engine lubrication (including filter). . . 9 qts.
Transmission case (includes hydraulic system). . . . . Syncro-Range - 8 gals.
Power Shift - 9 gals.
Front differential. . . . . 9 gals.
Rear differential. . . . . 4-1/2 gals.
Rear differential with lock. . . . . 9 gals.
Winch housing. . . . . 9 qts.

	Syncro-Range (16.9 x 30 tires)	Power Shift with Short Frame (16.9 x 30 tires)	Power Shift with Long Frame (18.4 x 34 tires)
Turning clearance circle (with blade) . .	35 ft. 6 in.	35 ft. 6 in.	38 ft. 8 in.
Turning radius	16 ft. 8 in.	16 ft. 8 in.	19 ft. 2 in.

DIMENSIONS

	Syncro-Range	Power Shift with Short Frame	Power Shift with Long Frame
Over-all height (to top of canopy)	105-1/2 in.	105-1/2 in.	105-1/2 in.
Over-all width (with 16.9 x 30 tires)	89 in.	91 in.	91 in.
Over-all length (front blade extended to log bumper)	200 in.	203-1/2 in.	218 in.
Ground clearance	18 in.	18 in.	18 in.
Wheel base.	89 in.	89 in.	103-1/2 in.
Stability weight	12,200 lbs.	13,200 lbs.	14,000 lbs.

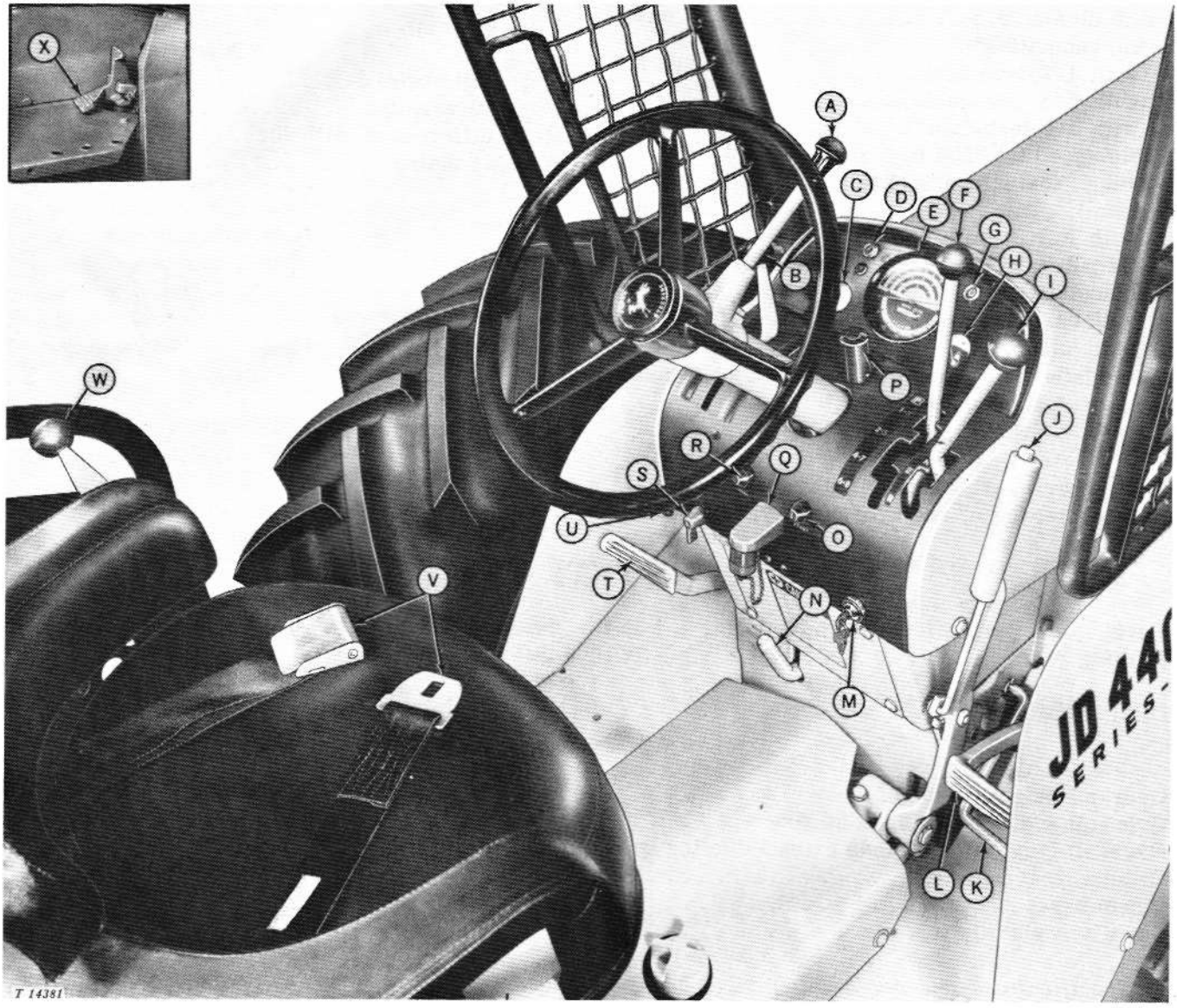
Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with I.E.M.C. Standards.

OPERATION

CONTROLS AND INSTRUMENTS

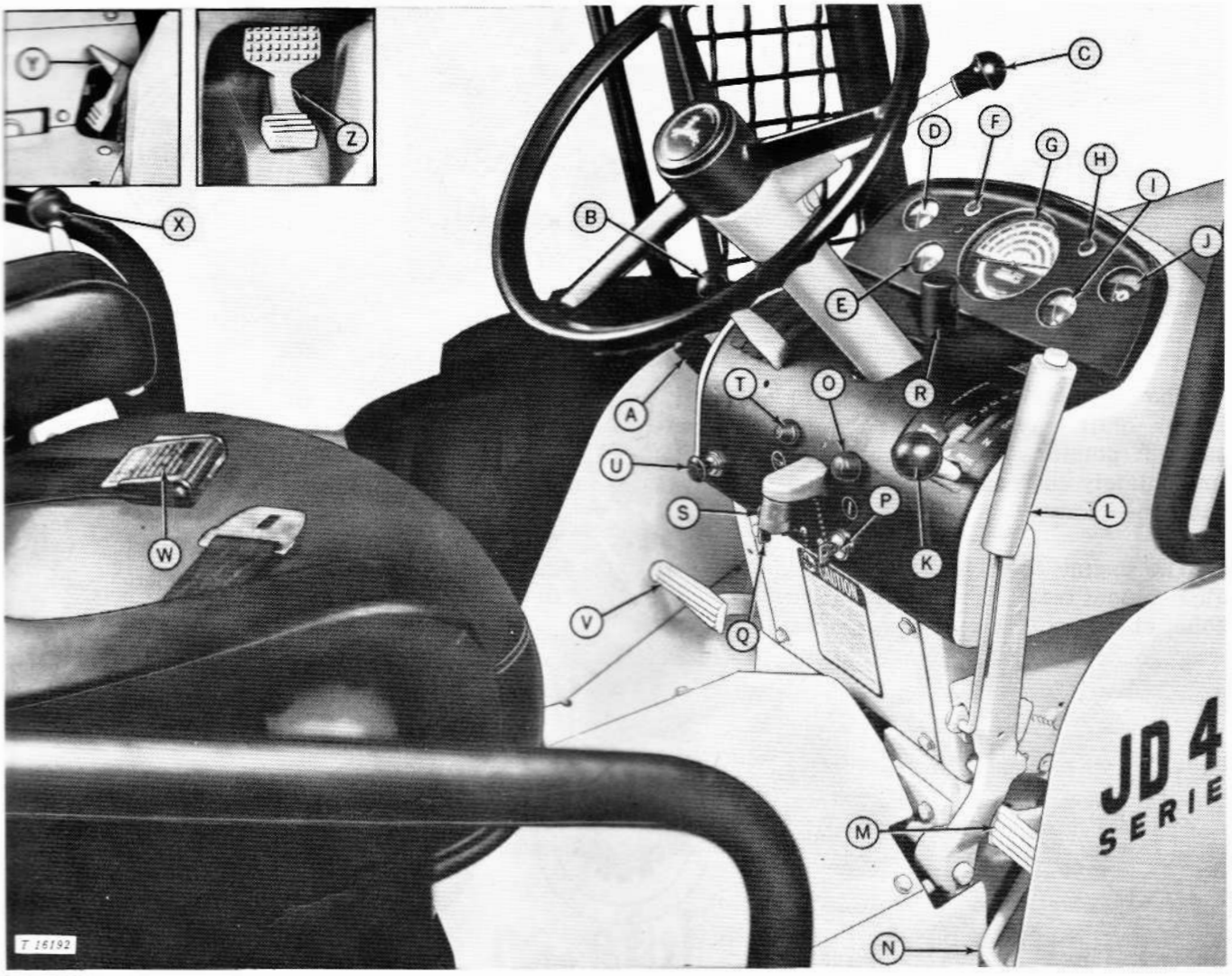
Most of the controls shown below and on page 5 are explained on other pages in this manual. Refer to the page number listed after each control.

SKIDDERS WITH SYNCRO-RANGE TRANSMISSION



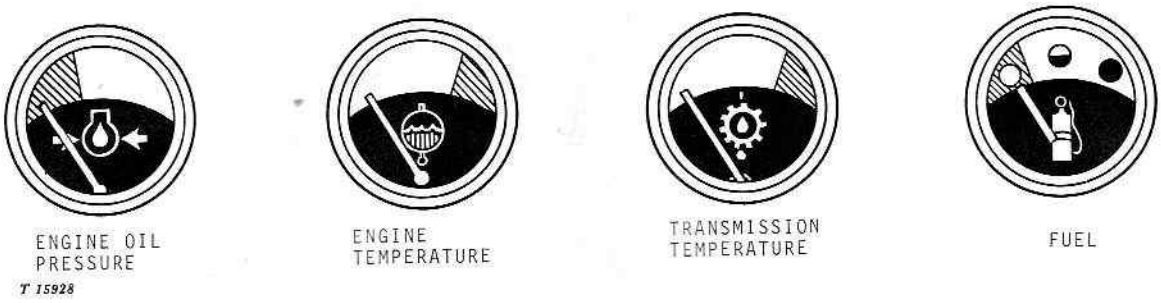
A – Hand Throttle (8)
B – Front Blade Control Lever (22)
C – Engine Coolant Temperature Gauge (6)
D – Alternator Indicator Light (6)
E – Speed-Hour Meter (6)
F – Speed Shifter Lever (13)
G – Engine Oil Pressure Indicator Light (6)
H – Fuel Gauge (6)
I – Range Shifter Lever (13)
J – Winching Brake Lever (15)
K – Foot Throttle (8)
L – Brake Pedal (53)
M – Key Switch (8)
N – Auxiliary Power Drive Control Lever (16)
O – Starter Button (8)
P – Dash Lamp (17)
Q – Starting Fluid Adapter (9)
R – Horn Button
S – Light Switch (17)
T – Engine Clutch Pedal (12)
U – Cigar Lighter (50)
V – Seat Belts (18)
W – Winch Control Lever (21)
X – Differential Lock Pedal (14)

SKIDDERS WITH POWER SHIFT TRANSMISSION



A – Disconnect Clutch Lever (8)
B – Front Blade Control Lever (22)
C – Hand Throttle (8)
D – Transmission Oil Temperature Gauge (6)
E – Engine Coolant Temperature Gauge (6)
F – Alternator Indicator Light (6)
G – Speed-Hour Meter (13)
H – Transmission Oil Filter Indicator Light (6)
I – Fuel Gauge (6)
J – Engine Oil Pressure Gauge (6)
K – Transmission Control Lever (12)
L – Winching Brake Lever (15)
M – Brake Pedal (53)
N – Foot Throttle (8)
O – Starter Button (8)
P – Key Switch (8)
Q – Light Switch (17)
R – Dash Lamp (17)
S – Starting Fluid Adapter (9)
T – Horn Button
U – Cigar Lighter (50)
V – Clutch Pedal
W – Seat Belts (18)
X – Winch Control Lever (20)
Y – Front Differential Lock (20)
Z – Rear Differential Lock (20)

GAUGES AND SYMBOLS



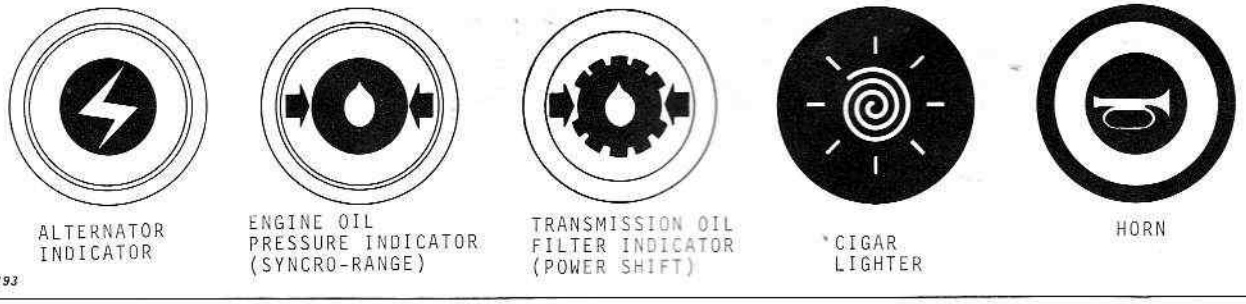
T 15928

The engine oil pressure gauge (skidders with Power Shift transmission) indicates oil pressure. If pointer moves to red zone, stop engine immediately and see page 58 for possible cause and remedy.

The engine temperature gauge indicates engine coolant temperature. If pointer moves to red zone, check cooling system (page 58).

The red zone on the transmission oil temperature gauge (skidders with Power Shift transmission) indicates overheating. If this occurs see page 59 for possible cause and remedy.

The orange-red zone of the fuel gauge indicates that the tank is empty.



T 16193

The alternator indicator light indicates the charging or discharging condition of the electrical system. The light should glow during starting. If the light does not go out after the engine starts or comes on while the engine is running, the alternator is not charging. Shut off the engine and trouble shoot the electrical system (page 59).

Skidders with Syncro-Range transmission have an engine oil pressure indicator light. If the light glows after the engine is started or during operation, stop the machine immediately and check crankcase oil level.

On skidders with Power Shift transmission, a transmission oil filter indicator light is provided for the transmission oil filter. The light will glow as the engine is started, before the engine oil pressure builds up. If the light glows after engine oil pressure is built up or during operation, it indicates that the transmission filter is plugged. Reduce engine speed and replace transmission oil filter as soon as possible.

CAUTION: Do not operate under load with plugged filter.

be careful.....
avoid accidents

OPERATING THE ENGINE

WARM-UP PERIOD

Warm up engine before operating under full load.

Run the engine at about 1500 rpm for 5 minutes and then operate it at about 1900 rpm for another 5 minutes. Cycle blade and steering several times to bleed air from external lines.

Operate the unit for the first 30 minutes in a lower gear than is normally required for the load. This gives the oil a chance to circulate freely and prevents undue wear on engine or transmission parts.

ENGINE IDLING

Avoid unnecessary engine idling. Prolonged engine idling may cause incomplete fuel combustion, and permit formation of gummy deposits on valves, pistons, and piston rings. It also promotes rapid accumulation of engine sludge and unburned fuel in the exhaust system.

When the unit is to remain idle for a considerable length of time, stop the engine.

ENGINE SPEEDS

The engine is designed to operate at working speeds ranging from 1500 to 2500 rpm. The engine can be operated at any speed in the working range to meet various operating conditions.

USING HAND THROTTLE

Use the hand throttle to select any of the variable engine speeds between slow idle and fast idle. Push throttle upward to slow down the engine; pull downward to speed up the engine.

USING FOOT THROTTLE

The foot throttle is a handy control during blade and winching operations when the hands are busy with levers. When the pedal is released, the engine returns to the speed preset by the hand throttle.

PRE-STARTING INSPECTION

Peform the following checks and services before starting the engine for the first time each day.

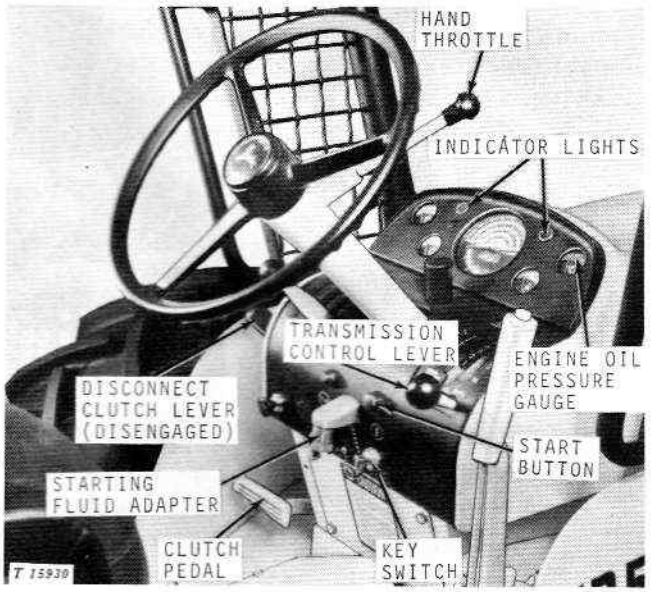
1. Check the engine crankcase oil level.
2. Check the radiator coolant level.
3. Check the fuel sediment bowl.
4. Inspect air cleaner restriction indicator.

Refer to page 29 for daily service and lubrication procedures.

STARTING THE ENGINE

Skidders with Power Shift

NOTE: Start engine only from seated position in operator's station.



Power Shift Starting Controls

CAUTION: It is impossible to start the engine by towing. Permanent damage to the transmission will result if starting is attempted.

1. Place the transmission control lever in (P) park to permit cranking the engine. Keep the winching brake applied until engine is started.

2. When engine and transmission are cold, pull back on disconnect clutch lever to eliminate transmission drag during starting.

CAUTION: Avoid prolonged disengagement of disconnect clutch. The transmission hydraulic pump, which supplies oil to the main hydraulic pump, does not turn with the clutch disengaged. Since the main pump rotates whenever the engine is operating, this condition may damage the main hydraulic pump because of lack of lubricating oil.

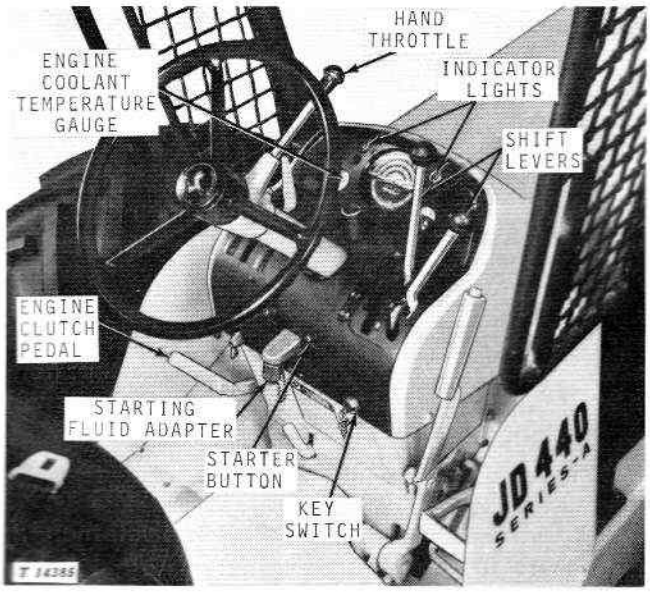
3. Place the hand throttle in the halfway open position.

4. Turn key switch clockwise to the ON position and depress starter button. (Do not crank engine for more than 30 seconds at a time. To do so may overheat the starter. Wait two minutes before trying again.)

5. During cold weather, use starting aids as necessary.

6. As soon as engine starts, release starter button and engage disconnect clutch lever. Alternator and transmission oil filter indicator lights should go out. The engine oil pressure gauge should show pressure. If either indicator light glows after engine has been running 10 seconds, shut off engine and determine cause.

Skidders with Syncro-Range



Syncro-Range Starting Controls

1. Place range shifter lever in neutral and speed shifter lever in (P) park to permit cranking the engine. Depress clutch pedal to decrease drag on engine. Keep winching brake applied until engine is started.

2. Turn key switch clockwise to the ON position and depress starter button. (Do not crank engine for more than 30 seconds at a time. To do so may overheat the starter. Wait two minutes before trying again.)

3. During cold weather, use starting aids as necessary.

4. As soon as engine starts, release starter button. Alternator and engine oil pressure lights should go out. If either indicator light glows bright red after engine has been running 10 seconds, shut off engine and determine cause.

CAUTION: Avoid prolonged disengagement of engine clutch. The transmission hydraulic pump, which supplies oil to the main hydraulic pump, does not turn with the clutch disengaged. Since the main pump rotates whenever the engine is operating, this condition may damage the main hydraulic pump because of lack of lubricating oil

STARTING AIDS

Starting aids are effective at low temperatures only when the engine is otherwise operating satisfactorily. They will not correct such deficiencies as low battery charge, crankcase oil of too heavy viscosity, and high electrical resistance, which may prevent the engine from starting.

STARTING FLUID ADAPTER

Injecting Diesel Starting Fluid into Adapter

Your unit is equipped with a John Deere starting fluid adapter. This is used to inject atomized starting fluid into the engine air intake system.

CAUTION: Starting fluid is highly flammable.

To use starting fluid, remove the safety cap and plastic spray button from the can. Remove the cap from the adapter and position the can under the adapter as shown with the tube in the adapter hole. To inject starting fluid, push up on can while cranking engine.

CAUTION: To avoid damage, turn engine with starter one or two revolutions before injecting starting fluid. Inject starting fluid only while engine is turning.

Relax pressure on the can between "shots" of fluid. Stop injecting fluid as soon as the engine starts. If engine begins to die during the first few minutes of operation, inject another "shot" of fluid. When the engine operates satisfactorily, remove the can from the adapter and replace the safety cap on the can.

Be sure to put the cap back on the adapter when not in use. This prevents dust from being drawn into the engine.

Store starting fluid cans where they will not be subject to extreme cold or heat. For best results, store fluid at room temperature.

CAUTION: Do not puncture or incinerate starting fluid containers.

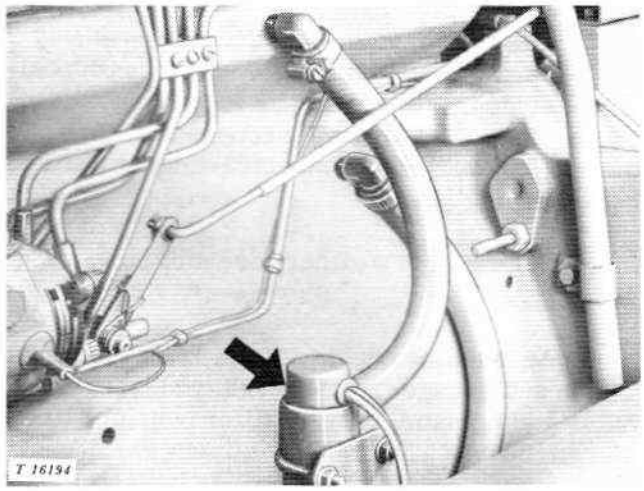
ADDITIONAL BATTERIES

Starting the engine in cold weather can be made easier by connecting an additional 12-volt battery in parallel with the 12-volt batteries on the tractor.

Use jumper cables to connect positive (+) terminals of booster battery and tractor battery and the negative terminals of the booster battery and tractor battery. Connect negative terminals last. See your John Deere dealer for booster batteries.

CAUTION: Batteries are NEGATIVE grounded only. Reversed polarity in battery or alternator connections will result in permanent damage to the electrical system.

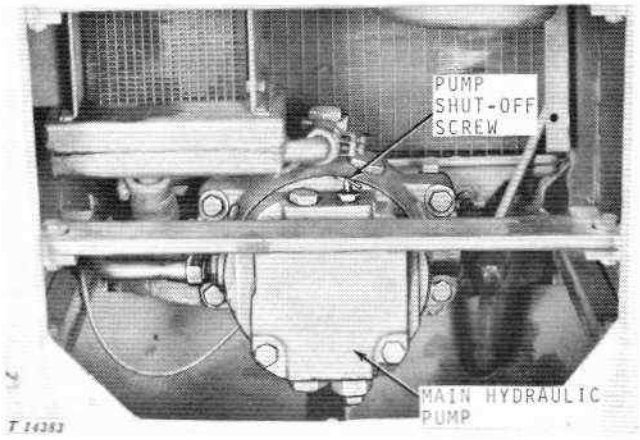
ENGINE COOLANT HEATER



Engine Coolant Heater

A 1000-watt, 115-volt electrical coolant heater can be installed on the engine. The heater can be plugged into any 115-volt electrical source.

MAIN HYDRAULIC PUMP SHUT-OFF SCREW



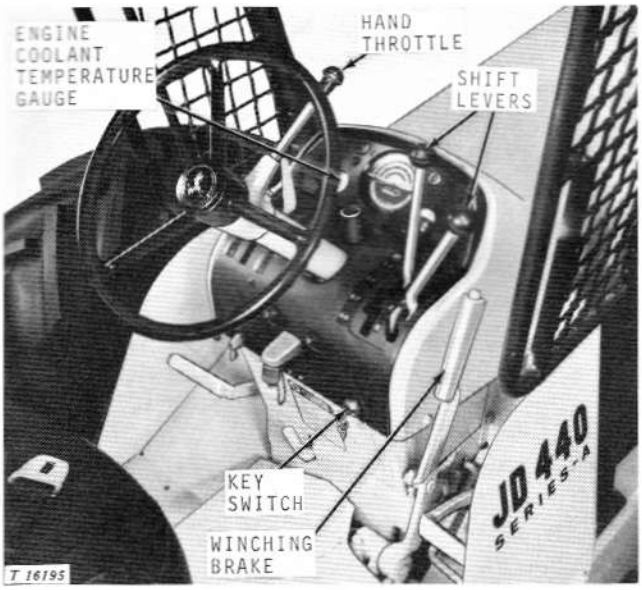
Main Hydraulic Pump Shut-off Screw

The starter speed may be increased by shutting off the main hydraulic pump so that it will not build pressure. Remove the grille and turn the shut-off screw in (clockwise) until resistance is felt. Turn the screw in one more turn.

After the engine has started, back the shut-off screw all the way out (counterclockwise).

NOTE: Oil will leak past the pump shut-off screw if it is not backed all the way out against the internal stop.

STOPPING THE ENGINE



Engine Stopping Controls (Syncro-Range Illustrated)

1. Stop the skidder. Shift to (P) park and apply the winching brake.

2. Run engine at 1500 rpm for a short time. This permits engine to cool gradually. Sudden cooling of a hot engine causes extreme contraction of parts and may damage engine.

3. Turn key switch to vertical (OFF) position. This deactivates shut-off solenoid on fuel injection pump.

NOTE: If engine will not stop due to an electrical failure, do the following: (1) With key switch turned off, set throttle lever at full slow idle position. (2) Disconnect control rod from injection pump throttle arm; back out slow idle screw on injection pump (one turn at a time) and move pump throttle arm forward until engine stops. (3) See your John Deere dealer for repair of the electrical shut-off or wiring.

4. Remove key from switch to prevent tampering with the machine.

5. Lower the front blade and other equipment to the ground.

CAUTION: When using equipment requiring the use of a hydraulic oil accumulator, the operating valves on the equipment used must be opened by actuating levers after the engine is stopped to relieve accumulator pressure. Accidental personal injury may occur if this precaution is not observed.

BREAK-IN PERIOD

Before the skidder was shipped from the factory, all bearings and friction surfaces were correctly fitted, and the crankcase was filled with fresh oil.

To be sure all bearing surfaces will be properly lubricated, operate at normal load for the first 100 hours. Avoid light loads and excessive engine idling during this period. Check periodically to be sure that adequate oil supply is maintained in the crankcase. If engine overheats, decrease load as required. If it becomes necessary to add oil during the first 100 hours, use oil of the type recommended on page 27.

At the end of the 100-hour break-in period drain the crankcase oil and refill the crankcase with oil of the proper viscosity and quality (see page 27).

CAUTION: Do not run the engine in an enclosed shed or garage. Make sure there is plenty of ventilation.

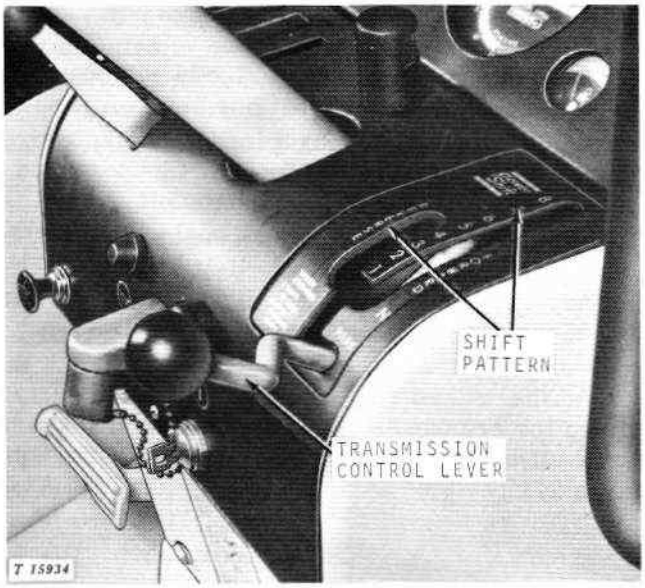
DRIVING THE SKIDDER

SHIFTING POWER SHIFT TRANSMISSION

The Power Shift transmission provides eight forward gears and four reverse gears.

The transmission can be shifted "on-the-go" or when the skidder is stopped by moving the transmission control lever to the desired gear. It is not necessary to use the clutch pedal when starting out or when shifting.

CAUTION: Release winching brake before shifting transmission control lever out of "neutral."



Transmission Control Lever

To move the skidder forward, move the transmission control lever from neutral to the desired gear in the forward side of the quadrant. Progressive shifting (one gear at a time) will result in smoother speed change.

To reverse the skidder, move the transmission control lever rearward progressively (one gear at a time) to neutral. Then, move the lever to the first gear in the reverse side of the quadrant.

To park the skidder, bring it to a complete stop, shift to (P) park and apply the winching brake (see page 15).

Reduce engine speed before making sudden extreme gear changes.

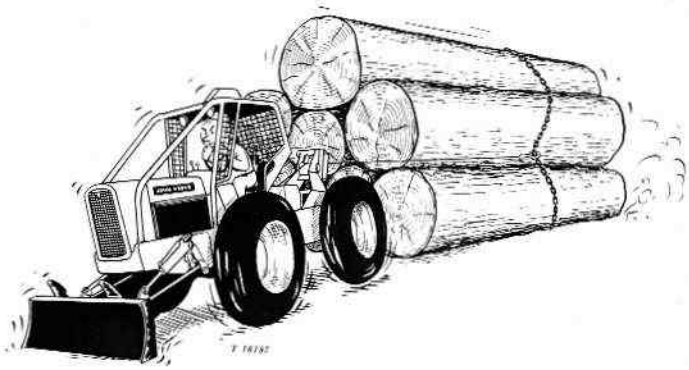
Use the clutch pedal when making emergency stops, or whenever gradual clutch engagement is required.

CHECKING INSTRUMENTS

When operating the skidder, check the transmission oil filter indicator light and the transmission oil temperature gauge.

If the indicator hand on the temperature gauge goes into the red zone, stop the skidder and clean all dirt and trash from the grille screens and the transmission-hydraulic oil cooler core. Also check for proper transmission-hydraulic oil level. If necessary, fill the system to the proper level. See page 36. If this does not correct the difficulty, see your John Deere dealer. Do not operate the skidder when the temperature indicator hand is in the red zone.

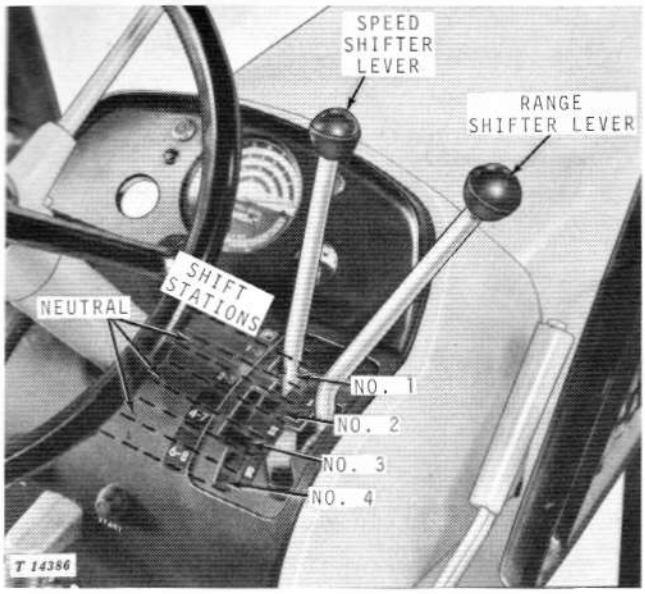
If the oil filter indicator light comes on, the transmission filter is clogged and needs replacing. Do not operate the skidder under load when the transmission oil filter indicator light is on. Reduce engine speed and replace transmission oil filter as soon as possible.



NOTE: Do not overload the skidder. When operating under heavy loads shift to a lower gear.

SHIFTING SYNCRO-RANGE TRANSMISSION

The Syncro-Range transmission has eight forward gears and four reverse gears.



Speed and Range Shift Levers

Gear shifting is done by a speed shifter lever (left-hand lever) and a range shifter lever (right-hand lever). Park position (P) is also selected with the speed shifter lever.

The range shifter lever controls shifts between low (I), neutral (N), high (II) and reverse (R). The speed shifter lever is used to select 1-3, 2-5, 4-7, or 6-8 speed groups.

SHIFTING FROM NEUTRAL

1. Depress clutch pedal.

2. Move speed shifter lever into gear desired. Then move range shifter lever from neutral to low, high or reverse range as desired.

3. Release clutch pedal to take up load smoothly.

SHIFTING TO ANOTHER SPEED (LEFT-HAND LEVER)

Fully stop the unit, disengage clutch, and move the speed shifter lever to the speed group desired.

SHIFTING TO ANOTHER RANGE (RIGHT-HAND LEVER)

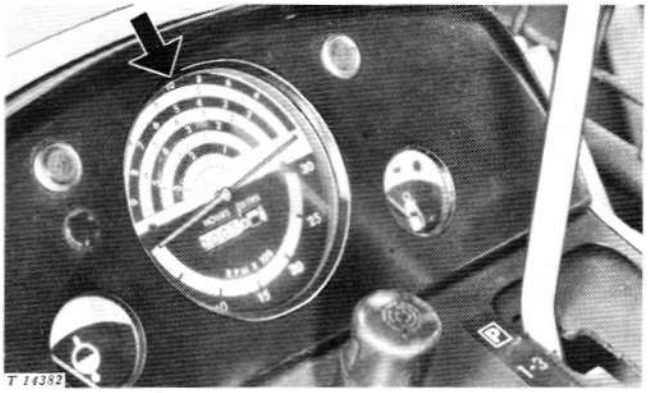
Shifting from low to high or high to low can be done "on-the-go." Depress clutch pedal and move range shifter lever with a quick, smooth motion.

Completely stop the skidder before moving range shifter lever into the reverse range. The transmission is not synchronized to allow shifting from a forward range to the reverse range while skidder is moving.

OVERLOADING

Avoid overloading the machine. If the engine speed drops excessively below that established by the position of the hand throttle, the unit is overloaded. When this occurs, operate in a lower gear. Overloading causes undue strain on parts, eventually resulting in poor operation and unnecessary repair expense.

SPEED-HOUR METER



Speed-Hour Meter

The speed-hour meter shows the following: (1) engine speed, in hundreds of rpm; (2) travel speed, in miles per hour, according to the gear in which skidder is operating (see travel speed charts on page 14); and (3) hours of operation, or accumulated engine service, in hours and tenths of hours (based on an average engine operating speed of 1900 rpm).

TRAVEL SPEEDS (IN MILES PER HOUR)

NOTE: Ground speeds shown are based on 16.9 x 30 tires and zero slippage.

SYNCRO-RANGE

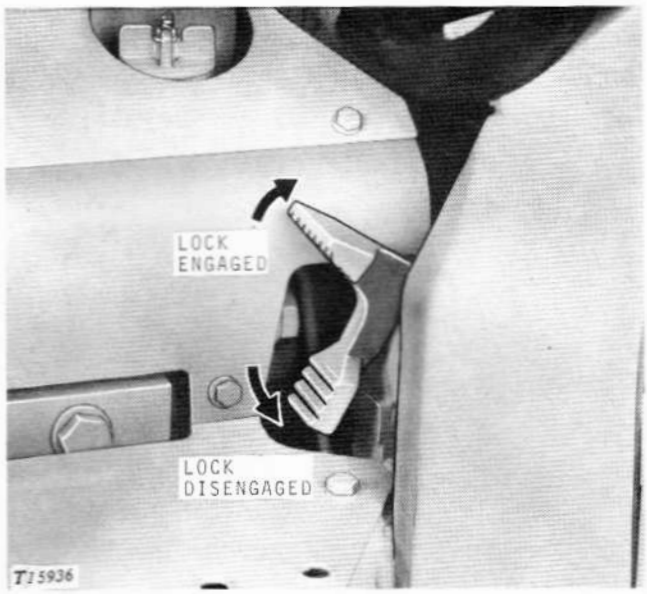
Speed Shifter Lever Position	Range Shifter Lever Position	1500 rpm	2500 rpm
1	I (Low)	1.3	2.0
3	II (High)	2.7	4.0
...	R (Reverse)	1.3	2.0
2	I (Low)	2.1	3.1
5	II (High)	4.3	6.4
...	R (Reverse)	2.1	3.1
4	I (Low)	3.5	5.2
7	II (High)	7.1	10.6
...	R (Reverse)	3.1	5.2
6	I (Low)	5.7	8.5
8	II (High)	11.7	17.4
...	R (Reverse)	5.7	8.5

POWER SHIFT

Transmission Control Lever Position	1500 rpm	2500 rpm
1	0.9	1.5
2	1.3	2.2
3	2.0	3.4
4	2.6	4.4
5	3.4	5.7
6	4.4	7.3
7	5.8	9.7
8	9.6	16.0
1st reverse	1.1	1.8
2nd reverse	1.5	2.5
3rd reverse	2.3	3.9
4th reverse	3.0	5.0

CAUTION: Fast driving is the cause of many accidents. Drive at a safe speed at all times.

DIFFERENTIAL LOCKS



Differential Lock (Front Lock Shown)

The front differential can be locked "on-the-go" by a pedal on the platform. (An optional rear differential lock is available on skidders with Power Shift.) Kick the pedal back to engage the lock, push downward to disengage the lock. The front differential lock pedal is located on the left platform, with the rear lock pedal (if used) on the right platform. All wheels will drive at the same speed, preventing the usual loss of power when one wheel is slipping.

POWER STEERING AND BRAKES

The skidder is equipped with hydraulic power steering and brakes.

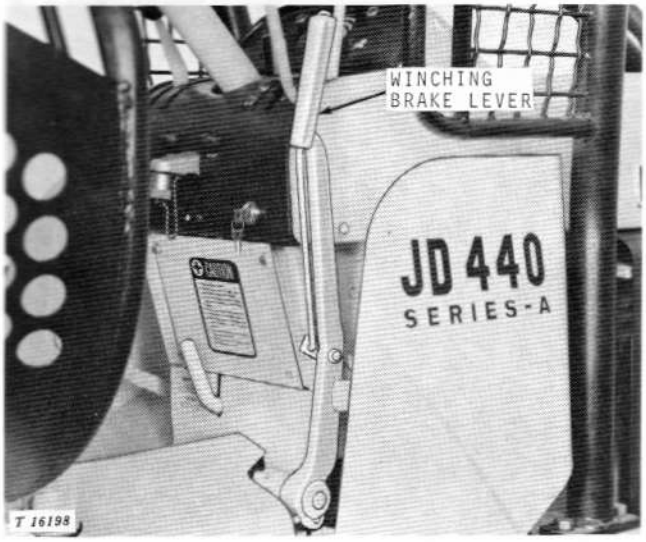
BRAKES–WITH POWER SHIFT

An accumulator in the brake system provides a small amount of pressure oil to stop the skidder in case the engine stops. See page 54 for checking accumulator.

BRAKES–WITH SYNCRO-RANGE

Oil is trapped in the brake system, allowing manual operation of the brakes to stop the skidder in case the engine stops. Pump the brake pedal a few times to actuate the brakes.

WINCHING BRAKE



Winching Brake Lever

To engage the winching brake, pull back firmly on the lever. To release the brake, press the release button on the winching brake lever and move the lever fully forward.

PARKING POWER SHIFT SKIDDER

Bring skidder to a complete stop, shift to park and apply the winching brake. (See above.)

NOTE: Release winching brake before transmission control lever is shifted out of neutral. Transmission control lever should be in (P) park before winching brake is applied.

PARKING SYNCRO-RANGE SKIDDER

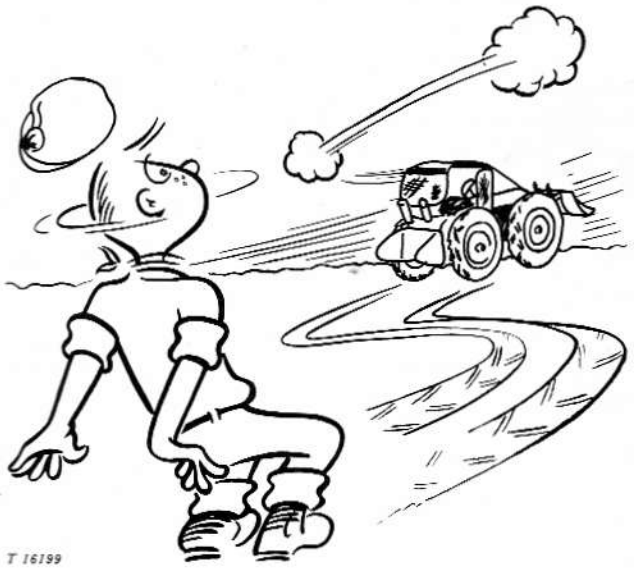
To park on level ground, fully stop the skidder and, with the engine running, move the speed shifter lever forward to (P) park and the range shifter lever to neutral. This will hold machine in place while parked.

To park on a steep incline, stop the skidder and with the engine running, place the speed shifter lever in (P) park and set the winching brake (see above). Then stop the engine.

RELEASING SYNCRO-RANGE SKIDDER FROM PARKED POSITION

When the skidder has been parked on a steep incline, follow these steps: (1) Start the engine. (2) Move range and speed shifter levers to positions desired. Release winching brake and, at the same time, ease out clutch pedal to take up the load smoothly. This procedure will avoid possibility of releasing all braking action before steering and brakes are activated.

NOTE: When the unit is parked on a steep slope, it may be necessary to do the following to relieve load on the transmission park lock: Depress clutch pedal and shift the range shifter lever into a forward or reverse range that will move unit UP THE INCLINE. VERY SLOWLY engage the clutch. Speed shifter lever can now be easily moved out of (P) park and into desired gear.



CAUTION: Whenever the skidder is stopped, place the transmission control lever or speed shifter lever in the (P) park position BEFORE DISMOUNTING. Never dismount from the skidder when it is in motion.

TOWING THE SKIDDER

A tow chain can be used only if the skidder brakes and steering are still operative. Do not use a tow chain if brakes have failed – use only a solid bar.

CAUTION: Do not tow the skidder in excess of 10 mph.

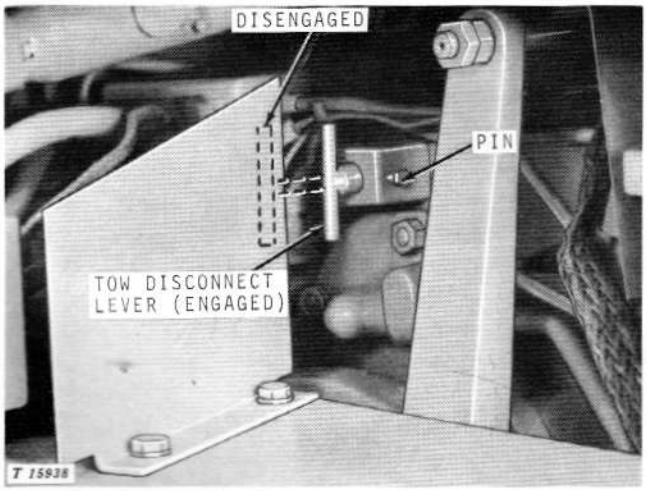
SKIDDERS WITH SYNCRO-RANGE TRANSMISSION

Whenever the machine is to be towed, move both shifter levers to neutral (neutral detents for speed shifter lever are between each gear). Also disengage the front differential lock.

SKIDDERS WITH POWER SHIFT TRANSMISSION

Towing a skidder equipped with Power Shift transmission is not recommended; however if it is necessary to tow it, the transmission must be disconnected from the driveline by the tow lever. UNDER NO CIRCUMSTANCES TOW THE SKIDDER WITHOUT DISENGAGING THE TOW LEVER. If possible, run the engine while towing to activate steering and brakes and lubricate the transmission. Also disengage the differential lock(s).

CAUTION: It is impossible to start the engine by towing. Permanent damage to the transmission will result, if starting is attempted.



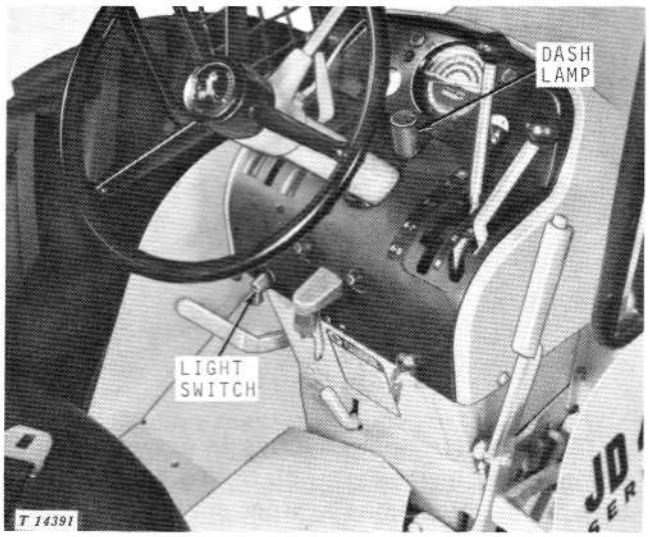
Tow Lever (Power Shift)

The driveline is disconnected by a tow lever located at the rear of the transmission. This lever can be reached through the hinge area. To disconnect the driveline, remove the pin in the tow lever and pull the lever back. Replace the pin. To engage the tow lever, remove the pin, push lever in, and replace pin.

NOTE: When moving the lever out of the "tow" position to operate the skidder, place the transmission control lever in (N) neutral position. It may be necessary to rock the skidder slightly when engaging the tow lever.

LIGHTS

LIGHT SWITCH



Light Switch and Dash Lamp

All lights are controlled by the light switch. The switch has four positions as follows:

Vertical - To turn off all lights.

1st Clockwise Position - To turn on bright front lights and white rear combination light.

2nd Clockwise Position - To turn on bright front lights and red rear combination light.

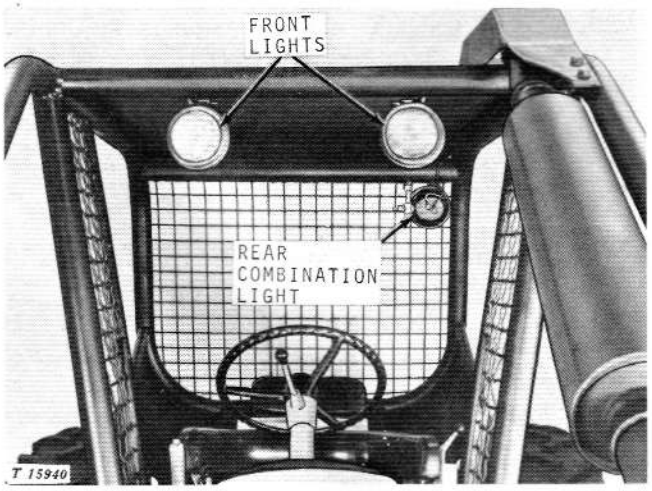
3rd Clockwise Position - To turn on dim front lights and red rear combination light.

DASH LAMP

The dash lamp (above) has an adjustable opening which illuminates the instrument panel.

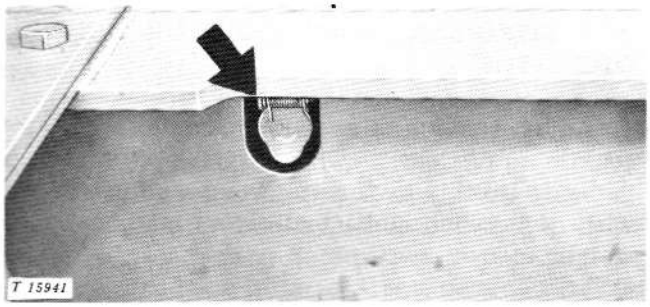
FRONT AND REAR LIGHTS

The sealed-beam front lights may be mounted on the canopy (if equipped) or on each side of the cowl. The combination light is a white flood and red warning type. It can be mounted on the rear of the canopy (if equipped) or on the rear of the equipment frame.



Front and Rear Lights

ELECTRICAL OUTLET SOCKET



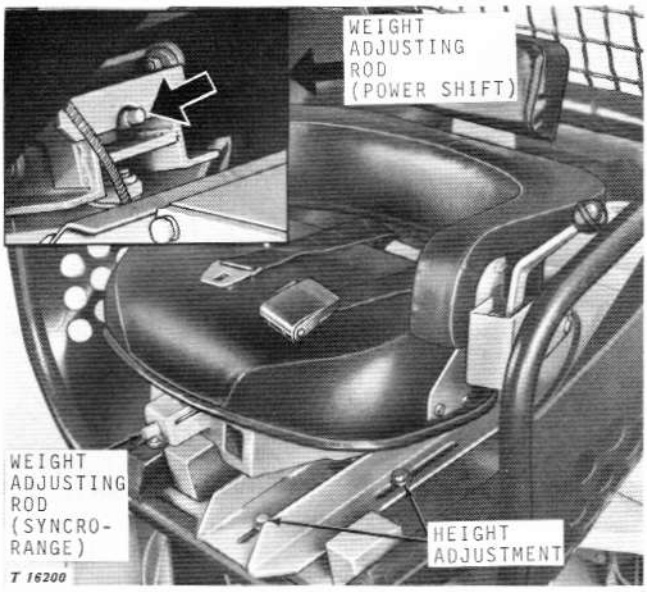
Electrical Outlet Socket

The electrical outlet socket, a source of 12-volt d.c. electrical power, is used for plugging in auxiliary lights or electrical service equipment. It is located on the left rear of the equipment frame.

HIGHWAY DRIVING

When driving the unit on a road or highway, use accessory lights and devices for adequate warning to operators of other vehicles. In this regard check local government regulations. Various lights and devices such as those illustrated and described on this page may be obtained from your John Deere Industrial Dealer.

SEAT



Seat Adjustments

ADJUSTING SEAT FOR WEIGHT OF OPERATOR

Adjust tension of seat compression spring for maximum "float" when driving over rough ground. Do this by turning weight-adjusting rod with a wrench until indicator matches your weight.

Adjusting rod is at rear of seat on skidders with Power Shift. Turn adjusting rod to the right to increase seat tension and to the left to decrease seat tension.

ADJUSTING SEAT FOR HEIGHT OF OPERATOR

Loosen cap screws securing the seat frame to the skidder. Slide seat backward or forward on inclined ramp as desired and tighten cap screws.

SEAT BELTS

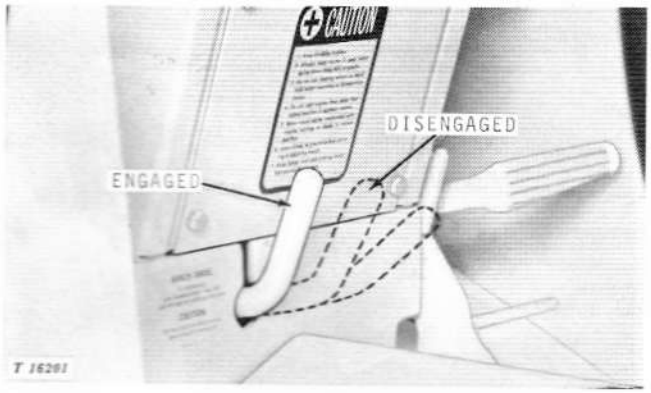
Your skidder is equipped with a seat belt for your protection.

CAUTION: Under almost all operating conditions:

1. The use of a seat belt with a canopy is recommended.

2. Use of a seat belt with canopy removed is not recommended.

AUXILIARY POWER DRIVE (WITH SYNCRO-RANGE)

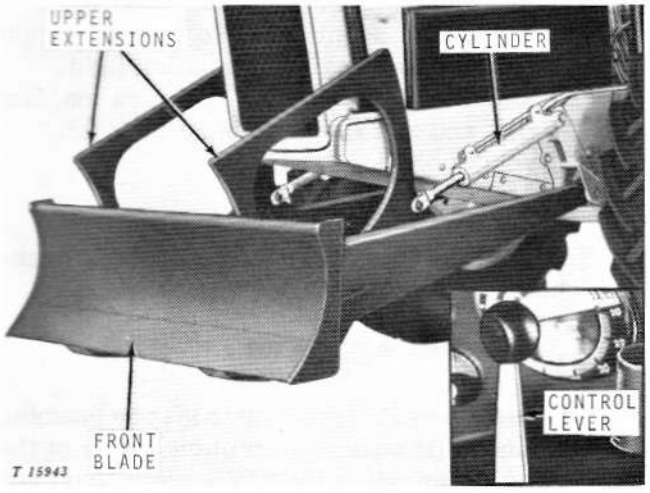


Auxiliary Power Drive

The auxiliary power drive is driven from the engine clutch pressure plate. To engage drive, turn lever clockwise against spring and push it forward. To disengage drive, turn lever clockwise against spring and pull it to the rear.

NOTE: Auxiliary power drive is live when engaged. Engine must be stopped before engaging or disengaging drive. It may be necessary to turn engine slightly with the starter to align the gears and complete the shift.

FRONT BLADE

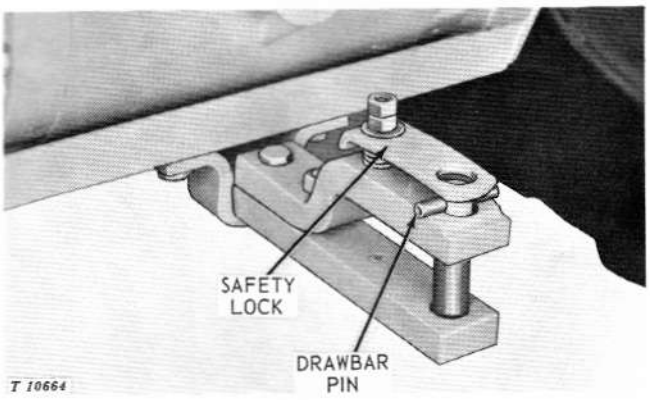


Front Blade

The front blade is used to stack logs and to move tree-length logs into position so they can be skidded to a central loading or processing area. The blade can also be used to remove small branches from logs.

The blade is controlled by a lever on the left side of the instrument panel (page 22). To raise the blade, pull the lever back. To lower the blade, push the lever forward.

DRAWBAR

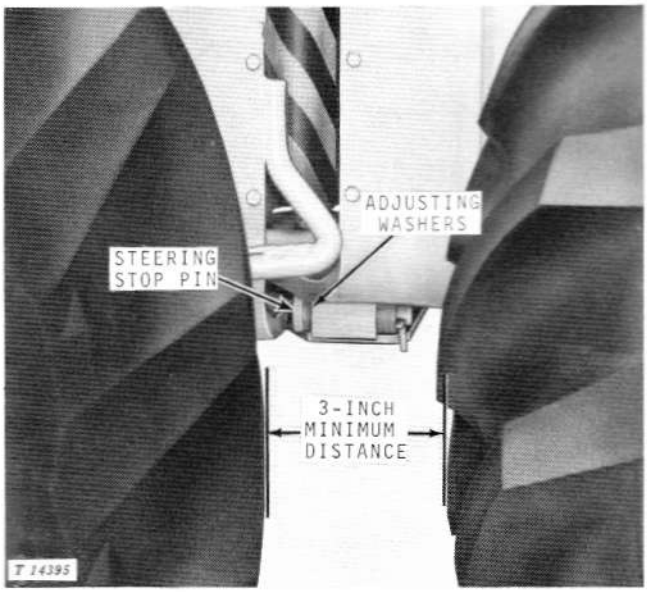


Drawbar

Your skidder may be equipped with a yoke-type rear drawbar. The drawbar mounts in a rigid position under the equipment frame and has no adjustments. A safety lock prevents loss of the drawbar pin.

Always use the drawbar when pulling towed equipment. However, when skidding logs, be sure to remove the drawbar and rear support guide. The front drawbar support can be left on the skidder at all times.

FRAME STEERING STOP PINS (Skidders with Short Frames)



Frame Steering Stop Pin

The skidder is "frame steered" at the frame hinge by means of hydraulic cylinders. To avoid possible damage to the unit during sharp turns, stop pins are provided at the hinge area on the front lower corners of the equipment frame (shown). The stop pins can be adjusted to increase or decrease the sharpness of the turn.

CAUTION: Before adjusting stop pins, be sure to turn off engine and place shift lever in (P) park and apply winching brake. This will avoid danger of steering wheel turning and jamming wheels and frames.

To check steering stops adjustment, turn the steering wheel full left or right, then measure the distance between the front and rear tires as shown. Do not jam frames together abruptly. This distance should be at least 3 inches. (On 14.9 x 28 tires, this distance should be at least 5 inches.) Adjust by moving spacer washers to front or rear of each steering stop pin. Be sure to recheck tire clearance each time new tires are installed or tire chains are added.

TIRES

Properly inflated tires are important to the operation of your skidder. Keep the tires inflated according to the recommendations shown in the chart below. Underinflated tires break and wear out rapidly. Overinflated tires reduce traction and increase wheel slippage.

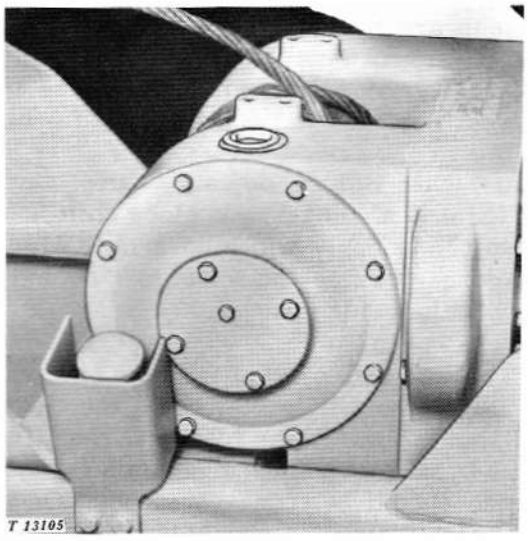
TIRE INFLATION CHART (Min. Inflation Pressure)

Tire Size	Ply	Syncro-Range	Power Shift
14.9 x 28	6	18 psi	-----
	8	24 psi	24 psi
16.9 x 30	6	16 psi	-----
	8	18 psi	22 psi
18.4 x 26	10	16 psi	18 psi
18.4 x 34	10	-----	16 psi
23.1 x 26	10	-----	16 psi

REAR WHEEL WEIGHTS

The performance of your skidder can be improved under certain conditions by installing or removing weights from the rear wheels. One or two weights may be added to each rear wheel. Each weighs approximately 120 pounds. Wheel weights are not required on the front wheels.

3305 POWER WINCH



Winch

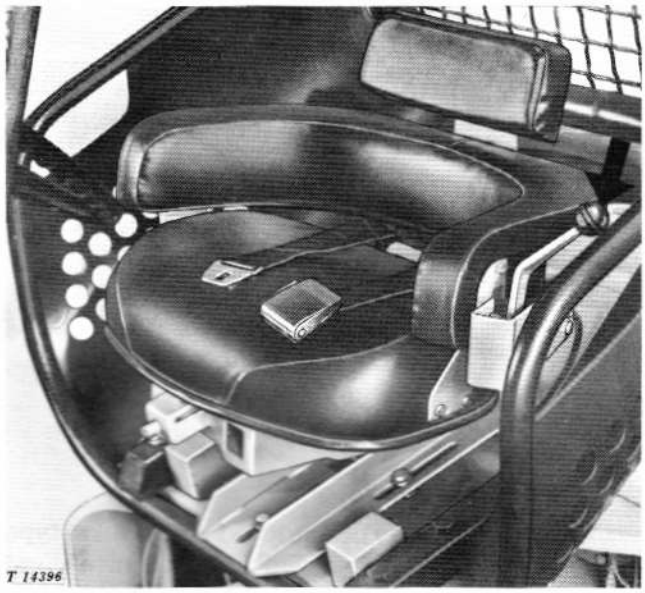
Your skidder is equipped with a 3305 John Deere Power Winch. This winch is driven by the auxiliary power drive and has a separate hydraulic control.

NOTE: On skidders with Syncro-Range transmission, the winch is driven by the auxiliary power drive. The auxiliary power lever must be engaged before the winch is operated (page 18). On skidders with Power Shift transmission, the disconnect clutch lever must be engaged (forward).

WINCH CONTROL LEVER

The winch control lever is located on the left arm rest of the operator's seat. The lever has three positions: HOLD, WIND, AND UNWIND.

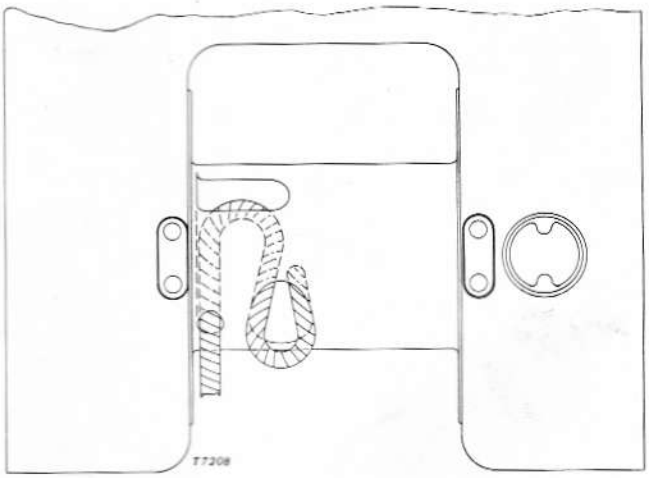
When the control lever is in the center position, the winch is in the "HOLD" position. In this position, the winch brake prevents the cable drum from rotating. To release the cable, move the control lever rearward to the "UNWIND" position. This allows the cable drum to "free-spool" and unwind by the "line-pull." The control lever will remain in the "UNWIND" position until released; then it will spring back to the "HOLD" position.



Winch Control Lever

To wind in the cable, push the lever forward to the "WIND" position. The winch will continue to wind until the lever is released. The lever is spring centered and will return to the "HOLD" position. The engine speed can be varied between 1500 rpm and 2500 rpm to regulate the winch wind-in speed.

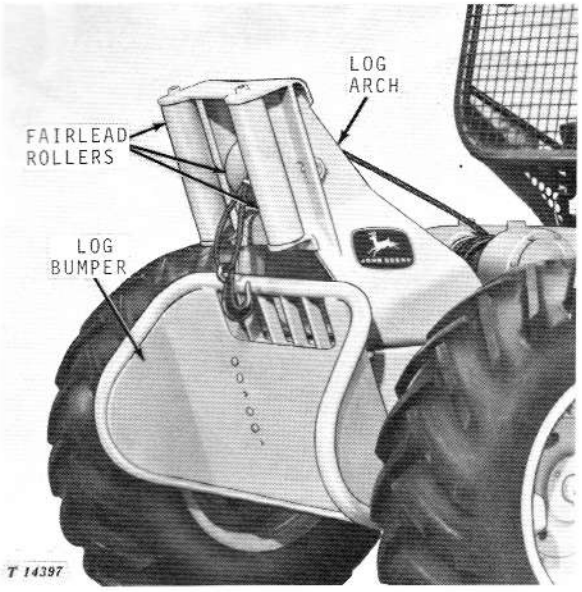
ATTACHING CABLE TO WINCH DRUM



Attaching Cable to Winch Drum

Thread cable through winch drum, fold end of cable back into drum, and pound it in.

LOG ARCH AND LOG BUMPER



Log Arch and Log Bumper

The log arch allows logs to ride high against the bumper to improve traction and provide sure control of the skidder. The log arch is equipped with a three-roller fairlead which permits side draft and heavy pull with minimum cable wear.

The log bumper can be used to butt logs against skidder when hauling on the skid trail. The bumper also acts as a protective device for the rear components of the skidder as well as for the operator. When trailing logs, the operator can watch through the vertical barred window of the bumper. The bumper may be raised 2-1/2 inches from normal position should extra clearance be desired.

FOR YOUR OWN PROTECTION-
DON'T TAKE A CHANCE!

SELECTIVE CONTROL HYDRAULIC SYSTEM

DESCRIPTION

Your machine may be equipped with a single or dual selective control hydraulic system to operate a front blade or remote controlled equipment.

Pressure oil from the pump is directed by the selective control valves, located inside the cowl, to the blade cylinders or remote cylinders.

The front blade or remote cylinders are controlled by one or two levers on the dash (shown).

Front blade cylinders are mounted on each side of the frame and are operated by a single control lever and valve.

Remote cylinders are coupled to breakaway couplers at the rear of the equipment frame.

USING SELECTIVE CONTROL LEVER

When used to operate the front blade, the selective control lever on the dash (shown) has five operating positions. When used to operate a remote cylinder, a sixth lever position for "float" is provided for use when a floating action of the equipment is desired. Levers used with remote cylinders also have a detent action which allows them to hold their positions in "fast extend" or "fast retract."

The operating positions for the selective control lever are:

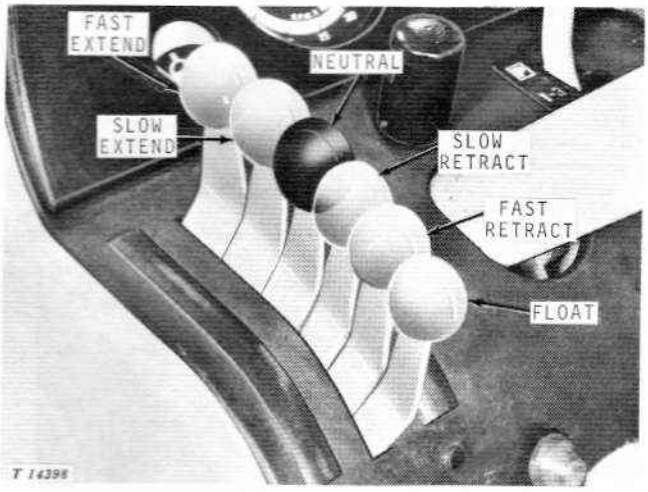
(1) *Neutral.* Move lever to center position in the quadrant.

(2) *Slow Extend.* Move lever slightly forward from neutral. The lever must be held until the desired adjustment is reached. This will slowly drop the front blade or slowly extend remote cylinder.

(3) *Fast Extend.* Move lever all the way to the front. This provides a fast drop of the front blade. The front blade lever must be held in this position until the desired blade position is reached. Remote cylinder control lever is held in "fast extend" by a detent.

(4) *Slow Retract.* Move lever slightly rearward from neutral. The lever must be held until the desired adjustment is reached. This will slowly raise the front blade or slowly retract remote cylinder.

(5) *Fast Retract.* Move lever rearward to the first lock position. This provides a fast raise of the front blade. The front blade lever must be held in this position until the desired blade position is reached. Remote cylinder lever is held in "fast retract" by a detent.



Selective Control Lever

(6) *Float Position.* (Remote Cylinder Only) To adjust lever for this position, move the operating rod from the lower hole on the control lever to the upper hole. To move lever to "float," pull the lever rearward past the retract position. The lever locks in this position and stays there until pushed forward and unlocked.

ADJUSTING RATE OF OPERATION

The rate of operation of each blade cylinder or remote hydraulic cylinder can be increased or decreased by adjusting the selective control valve. This adjustment increases or decreases the maximum flow of oil to the cylinders. The adjustment also affects the speed with which the equipment will be raised.

To make the adjustment, remove the hood and loosen cowl heat baffle. Then loosen the jam nut and turn the slotted screw on the front of the selective control valve clockwise to decrease the rate of operation or counterclockwise to increase it.

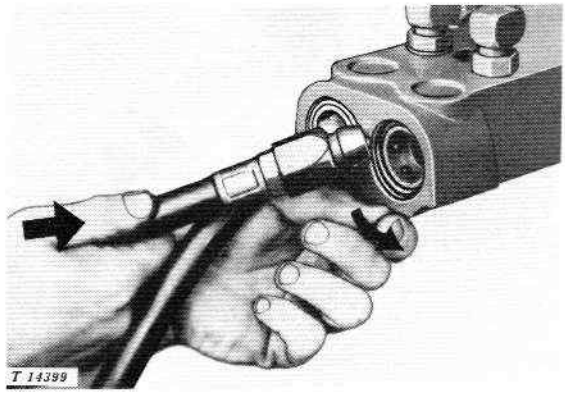
CAUTION: Full extension or retraction of a 3 x 8-inch remote cylinder should require at least 2 to 2-1/2 seconds, or for the front blade, 2-1/2 to 3 seconds for a full raise or drop. Faster speeds may cause damage.

The upper selective control valve operates the remote cylinder connected to the right-hand breakaway coupler. The lower valve operates the remote cylinder connected to the left-hand breakaway coupler.

REMOTE CYLINDERS

Breakaway couplers at the rear of the equipment frame are used to couple or uncouple remote cylinder hoses under pressure without loss of oil, regardless of whether or not the engine is running. They also safeguard the hoses by permitting them to be pulled loose without damage or loss of oil if drawn equipment should become disconnected.

CONNECTING REMOTE CYLINDER HOSES TO BREAKAWAY COUPLERS



Connecting Remote Cylinder Hoses

Remove the dust plugs and store them on the spring clips under the breakaway coupler. Remove the dust covers from the hose ends and store them on the coupler dust plugs. Always be sure the hose ends and the coupler receptacles are free from dirt before connecting the hoses.

Insert the hose from the stop rod side of the cylinder into the right-hand receptacle of the coupler. After the hoses are properly attached, move the coupler operating levers until they are at a right angle to the hoses. This lifts the valves in the hose end and the receptacle off their seats and permits oil to flow.

When the selective control lever is pushed forward, the cylinder will be extended.

BLEEDING REMOTE CYLINDER

If the hoses have been disconnected from the remote hydraulic cylinder, or if a new cylinder or one that has been out of service is installed, all trapped air must be removed after the hoses are connected to the breakaway coupler. Place the cylinder in a vertical position on the ground with the hose end up. Start the engine and move the remote cylinder operating lever back and forth seven or eight times to bleed the air from the cylinder.

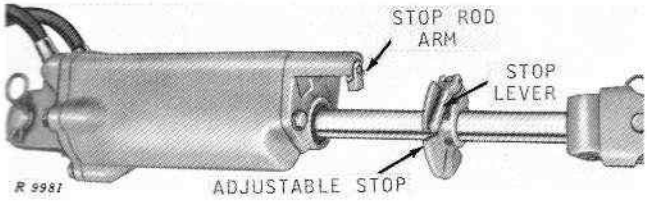
ATTACHING REMOTE CYLINDER TO EQUIPMENT

To install a remote hydraulic cylinder on most equipment, remove the spring locking pins and pull the attaching pins.

Set the remote cylinder in place on the equipment. Install the attaching pins and locking pins.

Many items of equipment have a locking device to hold them in transport position when the remote cylinder is removed. Be sure to disengage the locking device before attempting to operate the remote cylinder. See your equipment operator's manual.

ADJUSTING REMOTE CYLINDER STOP



Remote Cylinder Adjustable Stop Range

Adjust the remote cylinder stop for desired working stroke. This stroke may be varied from 0 to 8 inches. Move the adjustable stop on the piston rod for a stroke of 0 to 6-1/2 inches. In operation, after the stop contacts the stop rod arm, 1-1/2 inches of slow travel may be gained by holding the remote control lever in slow retract (to rear quarter of slot).

To adjust the piston stroke, lift stop lever and slide adjustable stop along rod. Press stop lever down to clamp stop on rod. If stop does not clamp securely, lift lever and rotate it clockwise before locking in place.

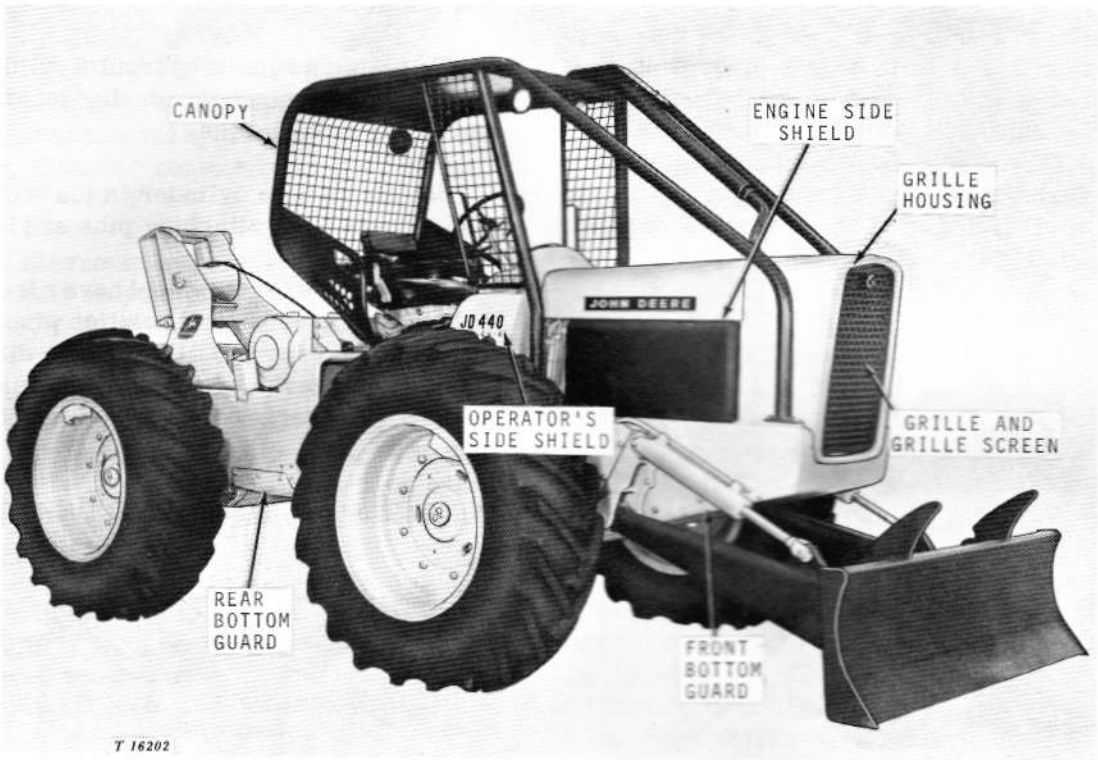
CAUTION: Adjustable stop must be located on rod so that stop arm contacts a flange on stop. To prevent damage, be sure lever is clamped securely.

REMOVING HOSES FROM BREAKAWAY COUPLERS

Pull hose from coupler. This causes coupler lever to rotate to the rear, sealing off oil flow. Insert protective dust plugs in couplers.

NOTE: Avoid pulling hoses from coupler at an angle. This could damage hoses, and also makes hose harder to pull from receptacle.

PROTECTIVE EQUIPMENT



CANOPY

Your skidder is equipped with a canopy designed to give maximum operator protection and still give good all around visibility as well as ease of operation. The canopy should always be kept on the skidder when the unit is in use.

OPERATOR'S SIDE SHIELDS

These solid wrap-around side shields protect the operator from brush and other objects during close work in the woods.

ENGINE SIDE SHIELDS

These heavy-duty side shields protect the engine from debris when operating in the brush and woods or other extreme conditions.

BOTTOM GUARDS

Bottom guards are provided to give protection to the underside of the skidder. These guards protect the drive train and other components, such as the fuel tank.

GRILLE HOUSING AND GRILLE

The grille housing around the radiator is made of heavy steel plate as a protection for the engine and components. It is not recommended that the grille housing be used for pushing. Impact loads should also be avoided. Use the front blade for all pushing jobs.

The grille protects the radiator, oil cooler, and air cleaner. A grille screen helps to keep trash from damaging or plugging these vital parts.

INSTRUMENT PANEL COVER

An instrument panel cover is available from your John Deere dealer to protect gauges and indicator lights from vandalism.

SAFETY RULES

The safety of the operator is a prime consideration in the design of this machine. Guards, shields, and other safety features are built in whenever possible. However, reports on accidents show that careless use of machinery causes a high percentage of accidents. You can avoid many accidents by observing the safety rules on this page. Study these rules carefully and enforce them on the job.

Allow only trained operators to use skidder and equipment.

Never allow riders on a moving unit or its equipment.

Stay clear of hinged area if engine is running or steering wheel is being moved. Even with engine off, moving steering wheel on accumulator equipped machines may cause rapid pivot of wheels and frames.

Do not use steering wheel as handhold when mounting or dismounting.

Keep hands, feet, and clothing away from power-driven parts. Do not wear loose clothing near moving parts.

Never dismount from machine or service it while engine is running or front blade is raised.

Do not leave equipment raised when unit is stopped. Always lower it to ground.

When dismounting, always place shift lever in (P) park and apply winching brake.

When parking on a steep incline, always apply winching brake.

Shut off engine before refueling. Never smoke while filling the fuel tank.

The fuel tank filler cap is vented for safety. Always replace it with a vented cap.

Drive at speeds slow enough to insure your safety.

Drive slowly over rough ground or on hillsides.

Always keep skidder in gear when going down steep hills or grades.

Reduce speed before turning or applying brakes.

Never drive too close to the edge of a ditch or excavation.

When driving out of a ditch or excavation, or up a steep hillside, or when unit is hitched to a heavy load, ENGAGE CLUTCH PEDAL SLOWLY.

Keep shields in place.

Never operate engine in a closed garage or shed.

Add coolant only with engine stopped or idling. Turn radiator cap slowly to relieve pressure before removing it.

Prevent fire hazards or accidental starting by always disconnecting battery ground strap before adjusting unit and electrical system.

When driving on a road or highway, use accessory lights and devices for adequate warning to operators of other vehicles. In this regard check local governmental regulations. Lights and devices may be obtained from your John Deere dealer.

Escaping hydraulic oil under pressure can cause personal injury; therefore, be sure all connections are tight and that lines and hoses are not damaged. Before disconnecting lines in the hydraulic system and before connecting remote cylinder hoses, be sure to relieve all hydraulic pressure.

FUELS AND LUBRICANTS

FUELS

The quality of fuel used is an important factor in obtaining dependable performance and satisfactory engine life. Fuels must be clean, completely distilled, well refined, and non-corrosive to fuel system parts. Use fuel of known quality from a reputable supplier.

DIESEL FUEL SPECIFICATIONS

Use Grade No. 1-D or No. 2-D fuel, as defined by ASTM Designation D975 for diesel fuels. The Grade No. 2-D fuel is heavier and produces more work per gallon. However Grade No. 1-D fuel gives better performance under certain conditions (see chart).

Type of Engine Service	Ambient Air Temperature	Diesel Fuel Grade No.
Wide variation in load and speed, considerable idling.	Below 80° F. Above 80° F.	1-D 2-D
Intermediate load and speed, minimum idling.	Below 40° F. Above 40° F.	1-D 2-D
Heavy load and high speed, minimum idling.	Below 0° F. Above 0° F.	1-D 2-D
At altitudes above 5,000 feet.	All	1-D

Use fuel having less than 1.0 percent sulfur, preferably less than 0.5 percent. Sulfur content determines type of oil for engine. See "Lubricating Oils."

For maximum filter life, sediment and water should not exceed 0.10 percent.

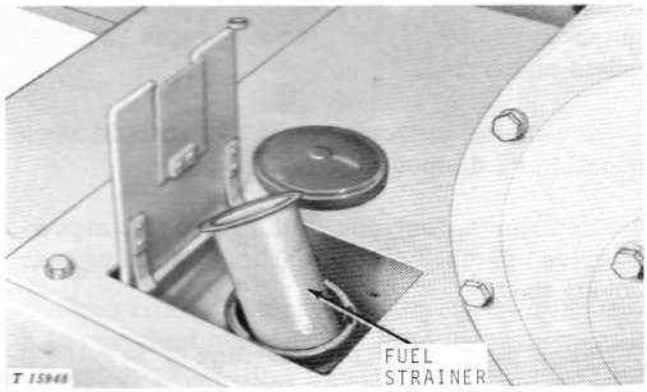
To maintain fuel delivery during cold weather operation, use Grade No. 1-D diesel fuel with a pour point at least 10° F. below lowest ambient air temperature.

The cetane number should be 40 minimum. Low atmospheric temperature, as well as high altitude operation, may require use of a fuel with a higher cetane number.

STORING FUEL

The importance of proper fuel storage cannot be stressed too highly. Many engine difficulties can be traced to dirty fuel and fuel that has been in storage too long. Keep dirt, scale, water, and other foreign matter out of the fuel. Avoid storing fuel for a long period of time. Store fuel in a convenient place outside of buildings.

FILLING THE FUEL TANK



Location of Fuel Tank Filler Cap (Skidders With Power Shift Shown)

The fuel tank is located on the equipment frame. The fuel tank cap is located on the right side of the equipment frame. The fuel tank filler neck has a fuel strainer (skidders with Power Shift) to provide cleaner diesel fuel for smooth engine operation. Strainer is easily removed from filler neck for cleaning. Clean the filler neck area before removing cap.

Fill the tank at the end of each day's operation to prevent moisture from collecting and freezing in the fuel system.

A drain is provided on the fuel tank sump to drain off collected moisture (see page 36).

LUBRICANTS

Effective use of lubricating oils and greases is perhaps the most important step towards low upkeep cost, long life, and satisfactory service. Use only those lubricants specified. Apply them at the intervals outlined in the lubrication section.

ENGINE LUBRICATING OILS

When selecting oil for the engine, consider reliability of the oil supplier and manufacturer, viscosity for the fill period, and the type of service under which the engine will be operated.

RELIABILITY OF OIL SUPPLIER AND MANUFACTURER

There is no universal label indicating the quality of an oil, nor is there an independent reviewing organization to insure that claims made on oil labels are true. Therefore it is important that you select only recognized brands of oils furnished by a reliable manufacturer and supplier.

VISCOSITY

Either single viscosity oil or multi-viscosity oil may be used. Single viscosity oil provides satisfactory lubrication when smaller or more limited temperature fluctuations are encountered. Multi-viscosity oil provides satisfactory lubrication whenever a wider range of temperature is encountered and makes starting easier at low temperature.

Depending on the highest expected prevailing temperature for the fill period, use oil of viscosity as shown in the following chart:

Air Temperature	Single Viscosity Oil	Multi-Viscosity Oil
Above 90° F.	SAE 30	SAE 20W-40
32° F. to 90° F.	SAE 20W	SAE 10W-30
-10° F. to 32° F.	SAE 10W	SAE 10W-30
Below -10° F.	SAE 5W*	SAE 5W-20*

**Use of SAE 5W or 5W-20 may cause some increase in oil consumption. Check level more often when using these oils.*

TYPE OF SERVICE

The oil manufacturer identifies, on the oil container, the type of service for which an oil is classified. The identification is an American Petroleum Institute (API) service designation. The manufacturer may also indicate on the container that the oil meets an Ordnance Department military specification or other engine manufacturer's requirements.

API service classifications are not specifications and do not necessarily guarantee quality. These classifications only establish terminology for type of service so that the oil manufacturer may make his best recommendations. Military designations are used to identify oils which have qualified under military performance specifications.

Select the type of service for engine oils according to the amount of sulfur in the fuel being used. When fuel contains less than 0.5 percent sulfur, use oil having an API service classification DM. Oils that are designated as Mil-L-2104B or Supplement 1 may also be used. When fuel contains more than 0.5 percent sulfur, use oil having an API service classification DS or military specifications Mil-45199A (Series 3).

As further assurance of quality for S-1 oils, use only those oils bearing the following statement on the container, or words to the effect, "Passes Car Manufacturers' MS Sequence Tests."

TRANSMISSION-HYDRAULIC OILS

Use only John Deere Type 303 Special-Purpose Oil in the transmission-hydraulic system and differential housings. Other types of oil will not give satisfactory service and may result in eventual damage. This special oil, available from your John Deere dealer, may be used in all weather conditions.

GREASES

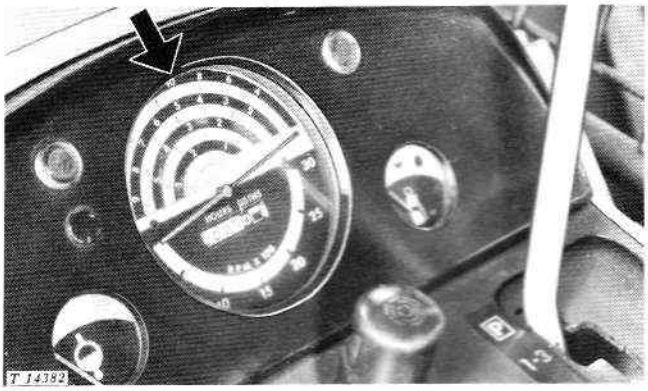
SAE multipurpose-type grease is recommended for all grease fittings. Application of grease as instructed in the lubrication section will provide proper lubrication and will keep contamination out of bearings.

STORING LUBRICANTS

Your skidder can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contamination.

LUBRICATION AND PERIODIC SERVICE

The intervals at which the various working parts should be checked, lubricated, serviced, or adjusted are based on hours of operation.



Hour Meter

Use the hour meter (above) to determine when periodic services are required.

BREAK-IN PERIOD

During the break-in period (100 hours), check the crankcase oil level periodically to be sure an adequate supply is maintained. If it becomes necessary to add oil, use oil of the type recommended (page 27).

At the end of the first 50 hours, replace the transmission and hydraulic system oil filters in the Power Shift transmission (see Items 29 and 32, page 30).

At the end of the first 250 hours, replace the transmission-hydraulic system oil filter in the Syncro-Range transmission (page 40).

At the end of the first 200 hours change backhoe return oil filter (optional on skidders with Syncro-Range). Thereafter change filter every 500 hours (page 41).

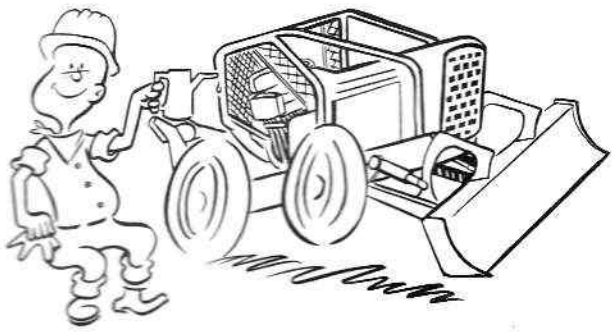
At the end of the 100-hour break-in period, drain the crankcase oil and refill the crankcase with oil of the proper viscosity and quality. Thereafter change crankcase oil every 250 hours (page 37).

LUBRICATION AND SERVICE INTERVALS

The lubrication and service periods are "as required," daily or every 10 hours, every 50 hours, every 250 hours, every 500 hours, every 1000 hours, every spring and fall season, and annually. These intervals are based on operation under normal conditions. When operating under unusual conditions, such as excessive heat, cold, dust, mud, or water, check and service the skidder more frequently.

The chart on the following pages is a list of components to be serviced at each interval and the service to be performed. Detailed instructions for performing each service are given on the pages which follow the chart. Each item in the chart is numbered, with the corresponding detailed procedure bearing the same number.

Do not handicap your equipment by using inferior or incorrect oil and grease. Use only quality lubricants at the specified intervals.



Your Skidder Will Respond to Proper Lubrication

AS REQUIRED

No.	Component	Description of Service	Capacity or Procedure	Desciption of Lubricant
1	Air cleaner element	Clean element when: indicator shows red with engine shut off, or excessive smoke or loss of power is noted.	Replace filter element: (1) if damaged; (2) after one year of service; (3) when filter is not responding to cleaning (indicated by excessive smoke or loss of power).	See page 32.
2	Engine clutch (Syncro-Range)	Check pedal free travel.	----------	----------
3	Power brakes	Check pedal free travel.	----------	----------
4	Winching brake	Check lever free travel.	----------	----------

DAILY OR EVERY 10 HOURS

5	Engine crankcase	Check oil level.	Between marks on dipstick.	See page 27 for engine oil viscosity and type.
6	Air cleaner	Empty dust cup.	----------	----------
7	Frame hinge pivots	Lubricate grease fittings.	----------	SAE multipurpose grease.
8	Steering cylinder pivot pins	Lubricate grease fittings.	----------	SAE multipurpose grease.
9	Front axle pivot pins	Lubricate grease fittings.	----------	SAE multipurpose grease.
10	Front blade pivot pins	Lubricate grease fittings.	----------	SAE multipurpose grease.
11	Winch fairlead rollers	Lubricate grease fittings.	----------	SAE multipurpose grease.
12	Radiator	Check coolant level.	----------	----------
13	Fuel transfer pump	Check sediment bowl.	Drain deposits.	----------
14	Fuel filter	Check sediment bowl.	Drain deposits.	----------

EVERY 50 HOURS

15	Exhaust muffler (spark arresting type only)	Clean out.	----------	----------
16	Engine clutch throwout bearing (Syncro-Range)	Lubricate bearing grease fitting.	Two strokes of grease gun.	SAE multipurpose grease.
17	Lower drive line ball bearing	Lubricate grease fittings.*	----------	SAE multipurpose grease.
18	Winch housing	Check oil level.	To oil level hole.	Above 32° F: John Deere Type 303 Special Purpose Oil or its equivalent. Below 32° F: SAE 5W-20 oil**
19	Winch and lower drive telescoping joint splines	Lubricate grease fittings.*	----------	SAE multipurpose grease.
20	Fuel tank sump and strainer***	Remove and clean. Drain sump.	----------	----------

**Perform this service daily when operating in deep mud or water.*

***Below 0° F., use three parts SAE 5W-20, one part No. 1 diesel fuel.*

****Fuel tank not equipped with strainer on skidders with Syncro-Range Transmission.*

EVERY 50 HOURS–Continued

No.	Component	Description of Service	Capacity or Procedure	Description of Lubricant
21	Transmission and hydraulic system	Check oil level. (Replace filter elements on Power Shift after first 50 hours of break-in and after first 50 hours of operation after any major transmission overhaul).	Between marks on dipstick.	John Deere Type 303 Special Purpose Oil or its equivalent.
22	Batteries	Check electrolyte level in each cell.	Fill each cell to bottom of filler neck.	Distilled water.
23	Wheel retainers	Check cap screws.	170 ft-lbs torque.	----------
24	Tires	Check air pressure.	----------	----------

EVERY 250 HOURS

25	Engine crankcase	Drain and refill (see IMPORTANT NOTE*)	9 U.S. quarts (including filter).	See page 27 engine oil viscosity and type.
26	Engine crankcase oil filter	Change element.	----------	Replace element only with a special John Deere type.
27	Alternator fan belt	Check belt tension.	3/4 inch flex with 20 pounds force.	----------
28	Differential housings	Check oil level.	See page 38.	John Deere Type 303 Special Purpose Oil or its equivalent.
29	Transmission filter (Power Shift)	Replace filter element.	----------	----------
30	Winch drive line universal joints	Lubricate grease fittings.**	One or two shots with hand gun. Avoid high pressure.	SAE multipurpose grease.
31	Lower drive line universal joints	Lubricate grease fittings.**	One or two shots with hand gun. Avoid high pressure.	SAE multipurpose grease.

EVERY 500 HOURS

32	Hydraulic filter (Power Shift)	Replace filter element.	----------	----------
33	Transmission-hydraulic filter (Syncro-Range)	Replace filter element.	----------	----------
34	Winch housing and oil filter	Drain and refill. Replace element.	9 U.S. quarts.	Same as item 18.

**IMPORTANT: (a) Every 250 hours is the maximum use period for engine oil under ideal operating conditions. Change crankcase oil more often for longer engine life and reduced oil consumption.*

(b) During intermittent cold weather operation, change oil at least every 250 hours or every six weeks, whichever occurs first.

(c) Also change oil at any seasonal change in temperature when a new viscosity of oil is required (see chart on page 27).

***Perform this service daily when operating in deep mud or water.*

EVERY 500 HOURS–Continued

No.	Component	Description of Service	Capacity or Procedure	Description of Lubricant
35	Fuel transfer pump	Clean bowl.	----------	----------
36	First stage fuel filter	Replace element. Clean bowl.	----------	----------
37	Injection pump and nozzles	Check pump timing and nozzles.**	----------	----------
38	Engine valve tappets	Adjust clearance.	----------	----------
39	Air intake hoses	Check for leaks.	----------	----------
40	Axle bearings	Lubricate grease fittings.*	6 to 8 shots.	SAE multipurpose grease.
41	Engine speeds	Check speeds.	----------	----------
42	Backhoe return oil filter (Syncro-Range)	Replace element.	----------	----------
43	Engine crankcase vent tube	Remove and clean with diesel fuel.	----------	----------

EVERY 1000 HOURS

44	Transmission and hydraulic system	Drain and refill. Clean pump intake screen.	9 U.S. gallons (Power Shift). 8 U.S. gallons (Syncro-Range).	Same as item 21.
45	Differential housings	Drain and refill.	4-1/2 U.S. gallons without lock. 9 U.S. gallons with lock.	Same as item 28.
46	Starter	Lubricate wicks.	----------	Same as item 5.
47	Main hydraulic pump	Clean valve filter.**	----------	----------

EVERY SPRING OR FALL

48	Cooling system	Drain, flush and refill. Remove trash.	4 U.S. gallons.	See page 51.
49	Engine crankcase	Drain and refill. Replace filter.***	9 U.S. quarts (including filter).	Same as item 5.
50	Accumulators	Check Action.**	See page 54.	----------

ANNUALLY

51	Air cleaner	Replace element.	----------	----------
52	Second stage fuel filter	Replace element. Clean bowl.	----------	----------

**Perform this service daily when operating in deep mud or water. NOTE: Lubricating not recommended in temperatures below 0° F. as axle outer seals may be forced out of position. If seals are unseated, tap back to original position. Never use a power grease gun.*

***See your John Deere dealer for this service.*

****Carry out only if 250 hour service has not been performed during the previous three-week period.*

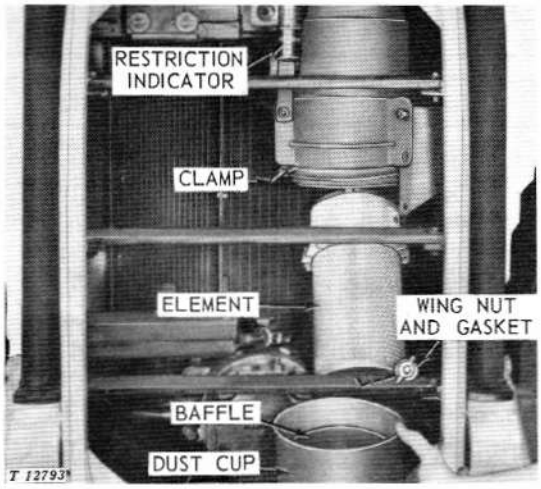
DETAILED PERIODIC SERVICES

AS REQUIRED

1. AIR CLEANER

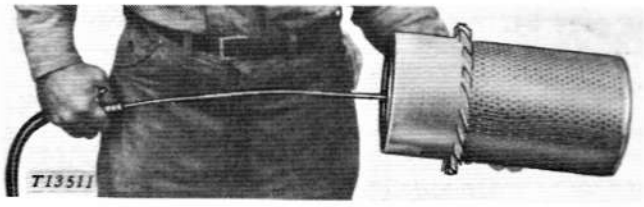
Clean air cleaner filter element whenever indicator red signal locks in full view. A portion of the red signal may be visible at times during operation (this is normal). Excessive smoke or loss of power may indicate a restriction.

NOTE: When the element must be serviced in the field, tap it on the palm of your hand as a temporary service. It is a good practice to carry a spare element (in a sealed plastic bag) with you.



Air Cleaner Assembly

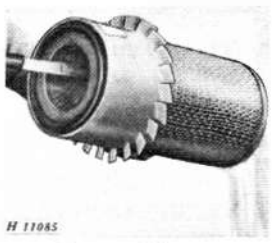
Dusty Element - Remove filter element. Tap element on the palm of your hand to remove dust, NOT ON A HARD SURFACE.



Cleaning Element Using Compressed Air

If tapping element does not remove dust, use compressed air (under 100 psi) to clean element. Direct clean dry air up and down the pleats, blowing from the inside to outside. DO NOT RUPTURE ELEMENT.

Washing Element



Rinsing Element

Oily or Sooty Element - Soak and wash element in solution of lukewarm water (no hotter than your hand can stand) and R36757R Filter Element Cleaner or an equivalent non-sudsing detergent. Rinse element thoroughly with clean water from hose having maximum water pressure of 40 psi. Shake excess water from element and allow it to air dry (usually requires 24 hours). Protect element from freezing until dry.

CAUTION: Never wash element in fuel oil, oil, gasoline or solvent. Never use compressed air to dry element.

After cleaning the element, inspect it for damage by placing a bright flashlight inside the filter. Discard any filter that shows the slightest rupture.

Inspect filter element gasket for damage. Replace element if gasket is missing or damaged.

IMPORTANT: Replace filter element: (1) if damaged; (2) after one year of service; (3) when filter is not responding to cleaning (indicated by excessive smoke or loss of power).

Thoroughly clean inside of air cleaner body with clean damp cloth. Place element in cleaner body with fins and gasket in first and secure with wing nut and gasket washer. Be sure gasket is in place between element and wing nut. Clean and install dust cup and baffle, and tighten clamp finger tight. Reset indicator by pressing reset button at end of indicator.

2. ENGINE CLUTCH (SYNCRO-RANGE)

Adjust clutch pedal if free travel is 1/2 inch or less. Set pedal free travel to 1 inch at the pedal pad. See page 52 for details.

3. POWER BRAKES

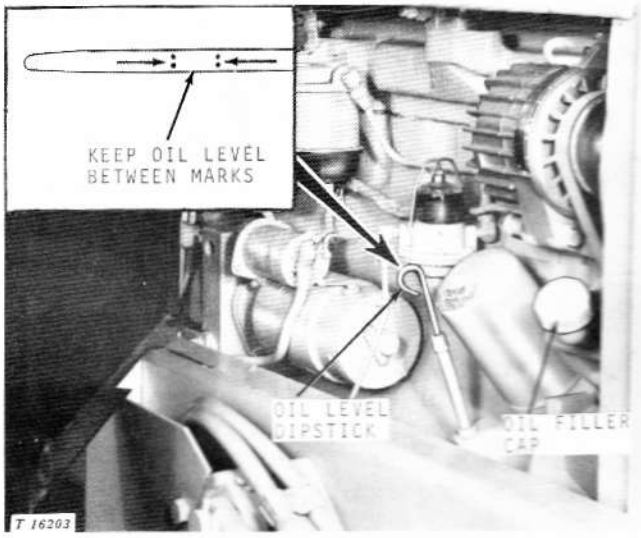
Bleed brake system if brake pedal free travel becomes 5-1/2 inches or greater. See page 53 for procedure.

4. WINCHING BRAKE

Adjust winching brake if lever has excessive free travel or if brake slips. See page 54.

DAILY OR EVERY 10 HOURS

5. ENGINE CRANKCASE

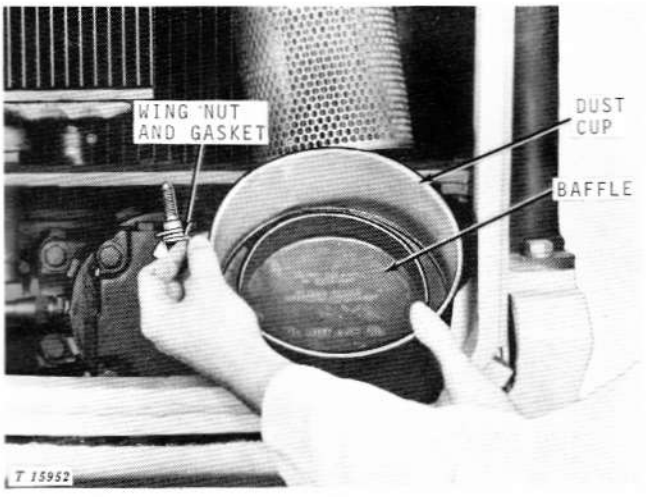


Crankcase Oil Level Dipstick and Filler Cap

Check crankcase oil level with unit on level ground. If oil level is at or below bottom mark on dipstick, add sufficient oil of the proper viscosity and quality as specified on page 27 to bring oil level up to the top mark on the dipstick.

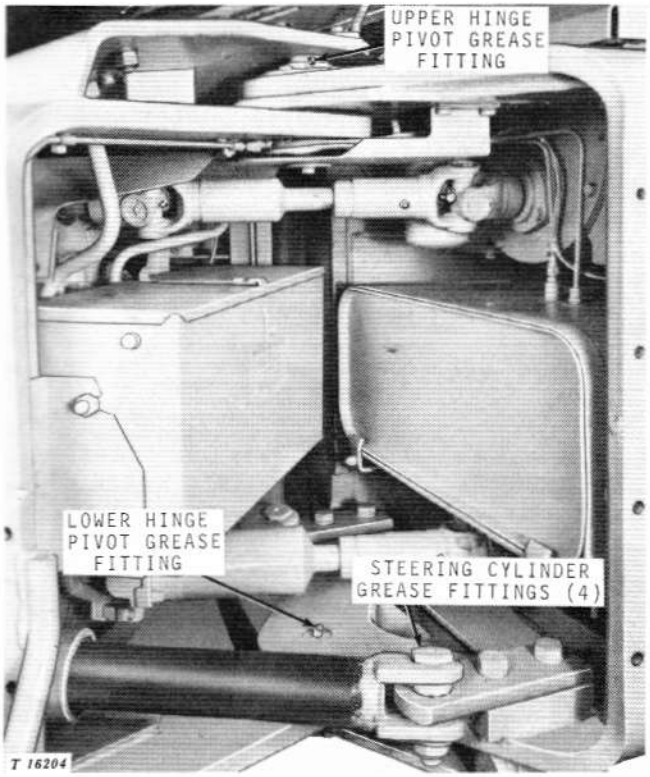
6. AIR CLEANER

Do not allow dust level to exceed one-half inch below slot in dust cup. Empty more often than every 10 hours if required. Remove foreign material around filter and tighten wing nut until element is tight against the seal.



Air Cleaner Dust Cup and Baffle

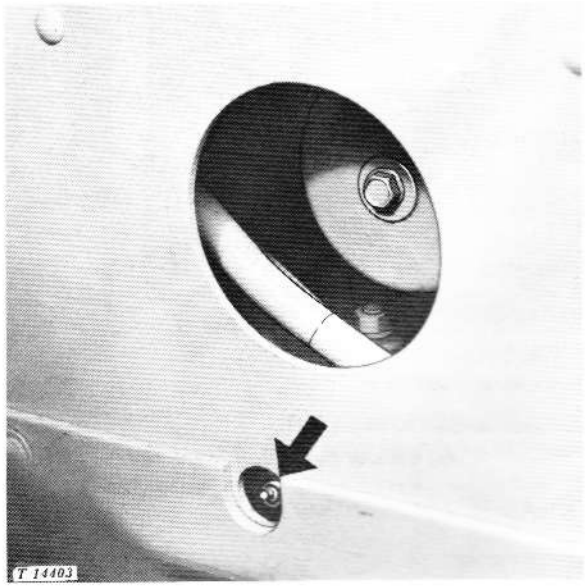
7. FRAME HINGE PIVOTS



Hinge Pivot and Steering Cylinder Grease Fittings

Lubricate the frame hinge pivots daily or every 10 hours of operation. Lubricate at the upper and lower grease fittings using SAE multi-purpose grease.

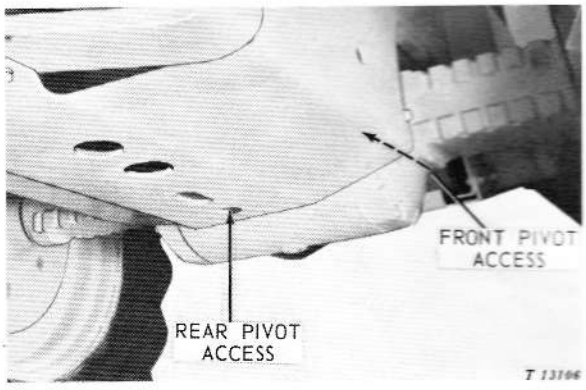
8. STEERING CYLINDER PIVOT PINS



Steering Cylinder Front Pivot Grease Fittings

Every 10 hours, lubricate the steering cylinder pivot pins at the four grease fittings on the ends of the two steering cylinders. The rear fittings are accessible at the frame pivot as shown on page 33. The front fittings are accessible through the access holes on the left and right engine side frames (see above).

9. FRONT AXLE PIVOTS

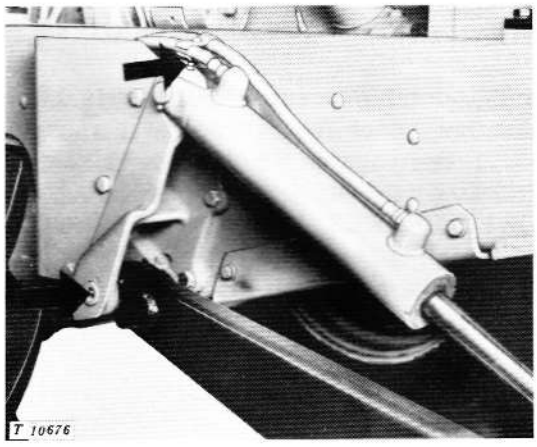


Front Axle Pivot Grease Fittings

Lubricate the two front axle pivot grease fittings daily using SAE multipurpose grease. An access hole is provided in the bottom guard for the rear grease fitting.

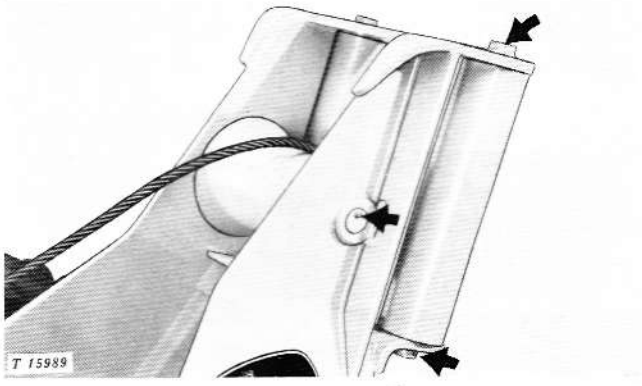
10. FRONT BLADE PIVOT PINS

Daily or every 10 hours, lubricate the front blade pivot points using SAE multipurpose grease (see arrows at upper right).



Front Blade Grease Fittings

11. WINCH FAIRLEAD ROLLERS



Winch Fairlead Grease Fittings

Daily or every 10 hours, lubricate the grease fittings on the three winch fairlead rollers using SAE multipurpose grease. There are six grease fittings: one on each end of the vertical rollers and one at each end of the horizontal roller.

12. RADIATOR

Check the level of coolant in the radiator daily. Coolant should be maintained at a level midway between the radiator core and filler neck.

13. FUEL TRANSFER PUMP SEDIMENT BOWL

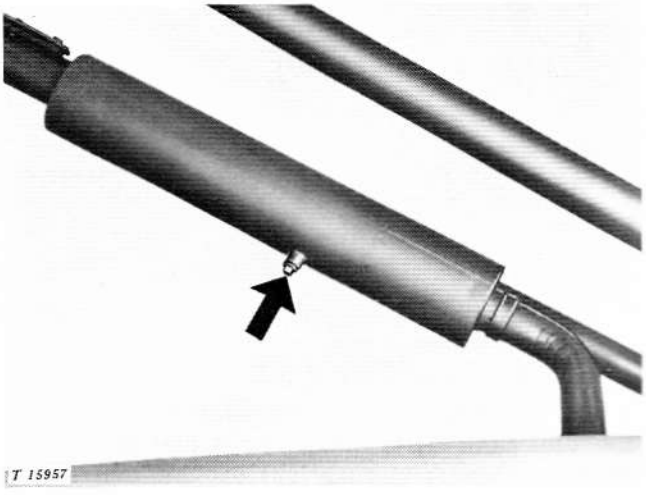
Check fuel transfer pump sediment bowl daily for water or dirt deposits. See page 47 for service.

14. FUEL FILTER SEDIMENT BOWLS

Check fuel filter sediment bowls daily and drain if necessary. See page 46 for service.

EVERY 50 HOURS

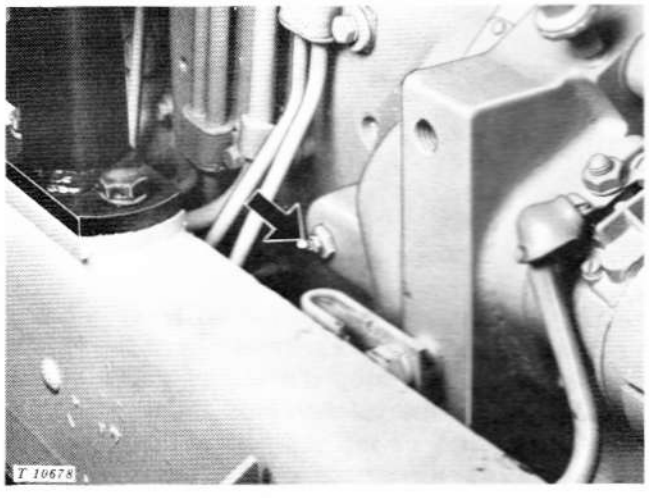
15. EXHAUST MUFFLER (Spark Arresting Type Only)



Spark Arresting Muffler

Every 50 hours of operation, remove square head plug from exhaust muffler. Then run engine for a minute until exhaust debris is cleaned out. Install plug.

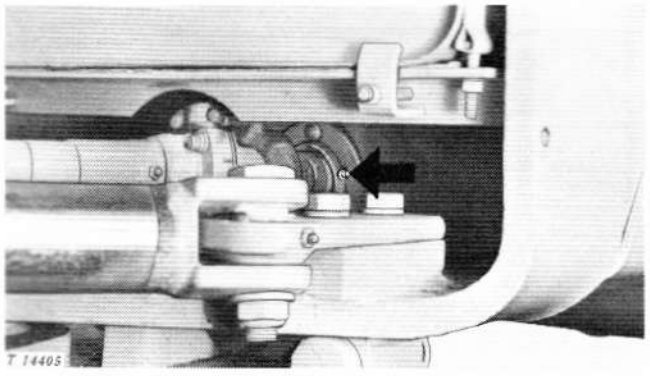
16. ENGINE CLUTCH THROW-OUT BEARING (SYNCRO-RANGE)



Engine Clutch Throw-Out Bearing Grease Fitting

Lubricate the engine clutch throw-out bearing every 50 hours of operation. The grease fitting is located on the right side of the clutch housing. Use two strokes of SAE multipurpose grease.

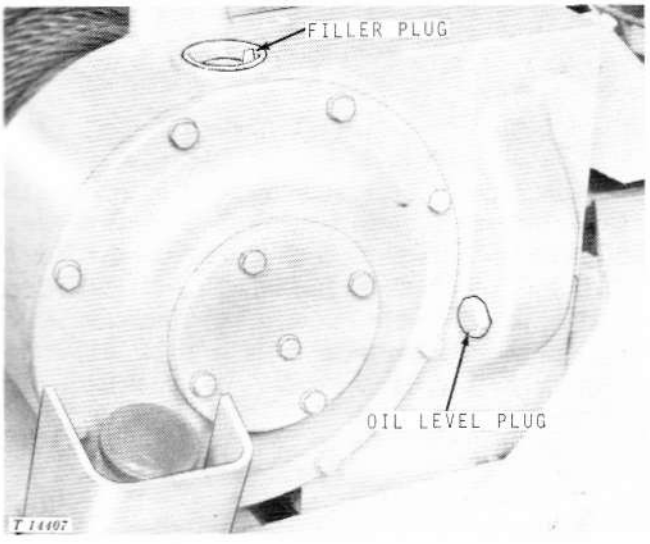
17. LOWER DRIVE LINE BALL BEARING



Lower Drive Line Ball Bearing Grease Fitting

Every 50 hours, lubricate the lower driveline ball bearing at the grease fitting (arrow) with SAE multipurpose grease. Turn the skidder fully to right and reach in under fuel tank to lubricate this fitting. IMPORTANT: Lubricate daily when operating in deep mud or water.

18. WINCH HOUSING

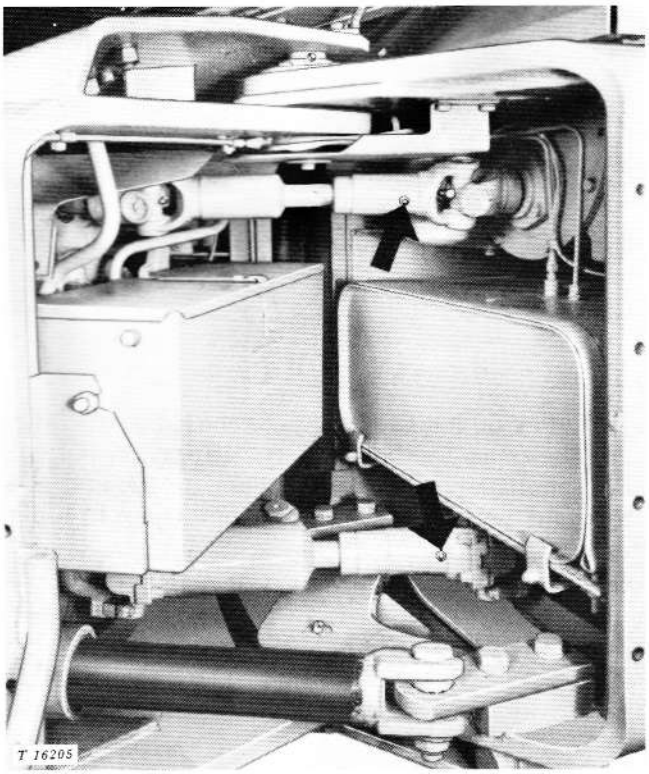


Winch Housing Plugs

Every 50 hours, check oil level in winch housing by removing oil level plug (see above).

If necessary, remove the winch filler plug and add oil specified in chart on page 29 until oil is to level of oil level hole. Reinstall plugs.

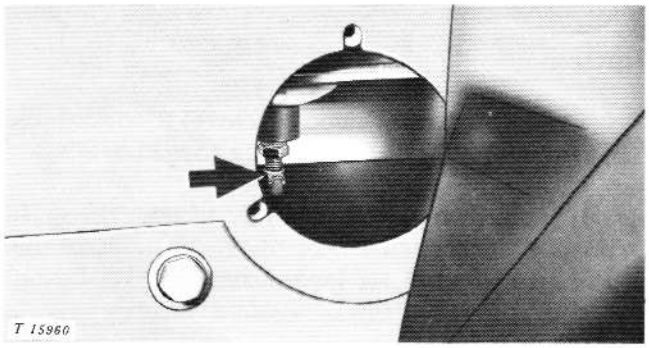
19. WINCH DRIVE LINE AND LOWER DRIVE LINE TELESCOPING JOINT SPLINES



Telescoping Joint Grease Fittings

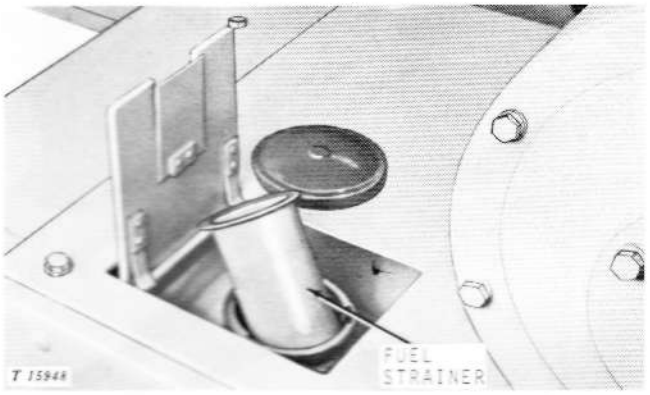
Lubricate the telescoping joint splines on the winch drive line and the lower drive line every 50 hours of operation with one or two strokes of SAE multipurpose grease. *IMPORTANT: Place unit in a full turn to right before lubricating to assure that grease reaches shaft splines, and to avoid grease pressure build-up. Never use a high pressure grease gun.*

20. FUEL TANK SUMP AND STRAINER



Fuel Tank Drain (Skidders with Power Shift Transmission Shown)

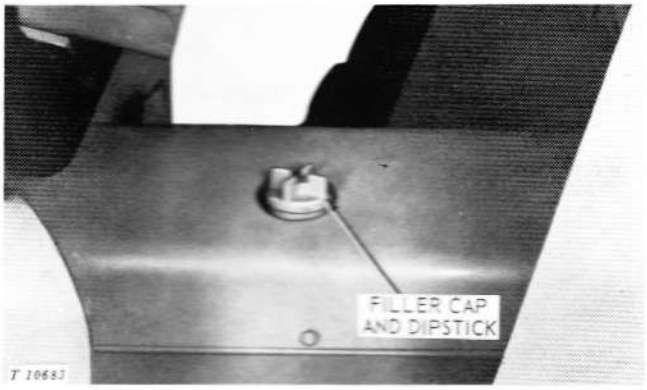
Loosen drain cock under fuel tank sump and drain collected moisture from sump every 50 hours or as required.



Fuel Tank Strainer

On skidders with Power Shift transmission, the fuel tank filler neck has a fuel strainer to provide cleaner diesel fuel for smooth engine operation. Strainer is easily removed from filler neck for cleaning.

21. TRANSMISSION AND HYDRAULIC SYSTEM



Transmission-Hydraulic Dipstick

Every 50 hours, check the oil level in transmission-hydraulics reservoir. Park the skidder on level ground, stop the engine and lower the blade. Check the oil level on the dipstick with the cap resting on top of the filler threads. If the oil level is below the top mark on the dipstick add oil to bring the oil level to the top mark using John Deere Type 303 Special-Purpose Oil or its equivalent.

IMPORTANT: On units with Power Shift transmission, the clutches and brakes are pressure lubricated. To prevent damage, the transmission reservoir must be full.

22. BATTERIES

Check battery electrolyte level. If distilled water is not available use clean soft water. Avoid use of hard water. Remove foreign material from top of battery and coat terminals with petroleum jelly. Clear vent holes in battery caps.

CAUTION: Never add water in freezing weather unless engine is to be run long enough (2 or 3 hours) to assure mixing of water and electrolyte.

23. WHEEL RETAINERS

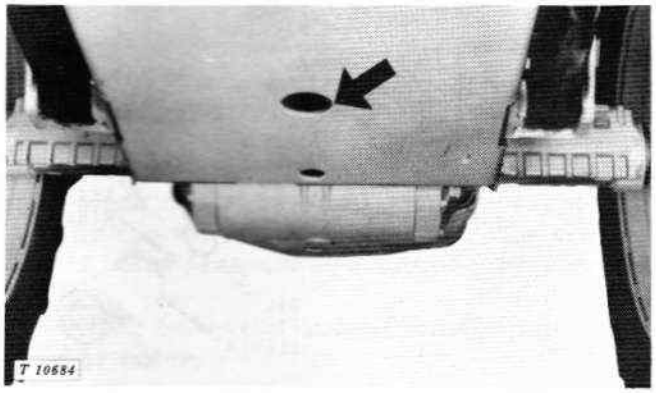
Check the tightness of wheel retainer cap screws. If necessary, retighten cap screws to 170 ft-lbs torque.

24. CHECKING TIRE PRESSURE

Every 50 hours, check the air pressure in the tires with an accurate gauge having one-pound graduations. See chart on page 19 for proper inflation pressure.

EVERY 250 HOURS

25. ENGINE CRANKCASE



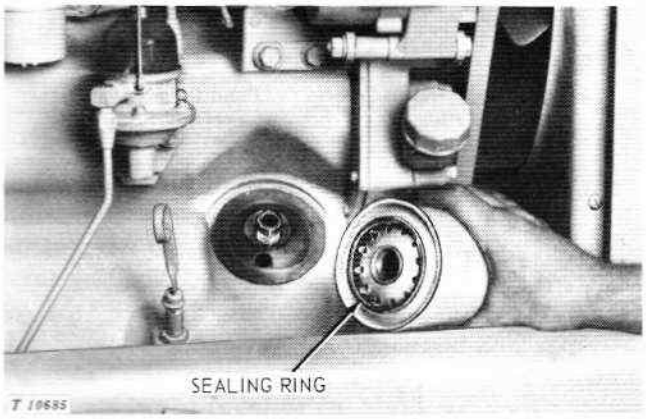
Crankcase Access Hole in Front Bottom Guard

Every 250 hours, replace oil in the engine crankcase as follows: Drain crankcase at the end of a day's operation at which time the oil is hot and all foreign material is in suspension. Remove drain plug (arrow) from bottom of crankcase. While oil is draining, replace the crankcase filter element.

IMPORTANT: (a) Every 250 hours is the maximum use period for engine oil under ideal operating conditions. Change crankcase oil more often for longer engine life and reduced oil consumption. (b) During intermittent cold weather operation, change oil at least every 250 hours or every six weeks, whichever occurs first. (c) Also change oil at any seasonal change in temperature when a new viscosity of oil is required (see chart on page 27).

Fill crankcase with 9 quarts of oil of proper seasonal viscosity. Oil level should now be at the top mark on the dipstick. Start engine and run it for a short time to check oil leaks around the filter cover and drain plug.

26. ENGINE CRANKCASE OIL FILTER



Replacing Engine Crankcase Oil Filter Element

Every 250 hours, replace the engine crankcase oil filter element. To remove filter element, turn it counterclockwise. Discard the old element and install a new one, making sure new sealing ring is inserted in bottom of element. Apply a thin film of oil to the sealing ring. Turn element clockwise by hand until sealing ring just touches mounting pad and then turn down an additional 1-1/2 turns. **Do not overtighten.**

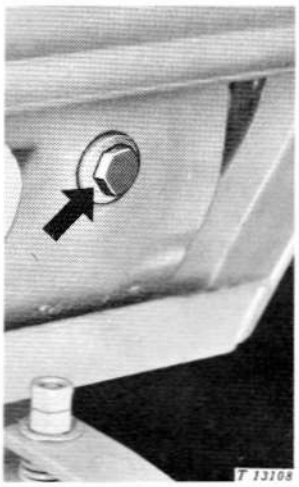
With oil in crankcase, start engine and check for leaks around filter element. Retighten if necessary but do not overtighten.

CAUTION: The element has a special bypass valve. Replace only with a genuine John Deere filter element supplied by your John Deere dealer.

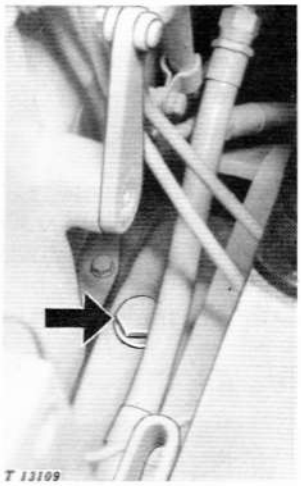
27. ALTERNATOR-FAN BELT

Check alternator-fan belt tension every 250 hours of operation. The belt should deflect 3/4 inch with 20 pounds tension. See page 49 for details.

28. DIFFERENTIAL HOUSINGS



Rear Differential Housing Oil Level Plug (Without Lock)



Front Differential Oil Level and Filler Plug

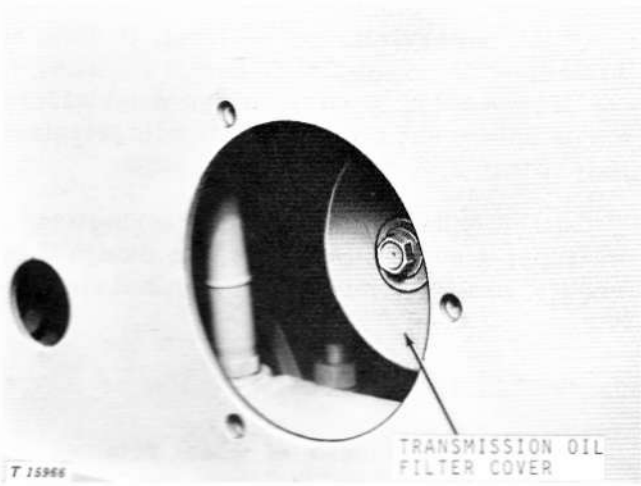
Check oil level in the rear differential housing (without lock) every 250 hours of operation. The oil level hole is located at the rear of the differential housing (see above). The oil level plug is accessible by reaching between the log bumper and rear differential case.

If necessary, add oil to level of oil level plug using John Deere Type 303 Special-Purpose Oil or its equivalent. The oil filler plug and hole are located under a cover on the rear equipment frame (see page 43).

Remove the protective cover or tool compartment floor, and filler hole plug. After filling the rear differential with oil, be sure to reinstall the tool compartment floor to avoid possible damage to the filler hole plug and oil lines.

NOTE: If conditions do not require the use of the front or rear differential locks for extended periods of time, the differential oil level should be checked (rear differential lock is available only on skidders with Power Shift transmission). Check the oil level at the filler hole located on the top left side of the front differential case. If oil is needed, fill to level of the filler hole using John Deere Type 303 Special-Purpose Oil or its equivalent.

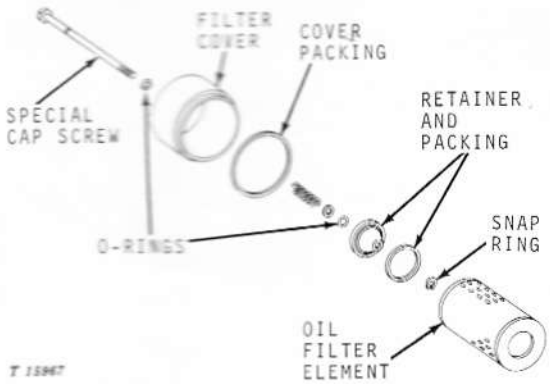
29. TRANSMISSION FILTER (POWER SHIFT)



Transmission Oil Filter

Every 250 hours replace the transmission oil filter. Remove the protection plate on the lower left side of the engine frame to replace filter element.

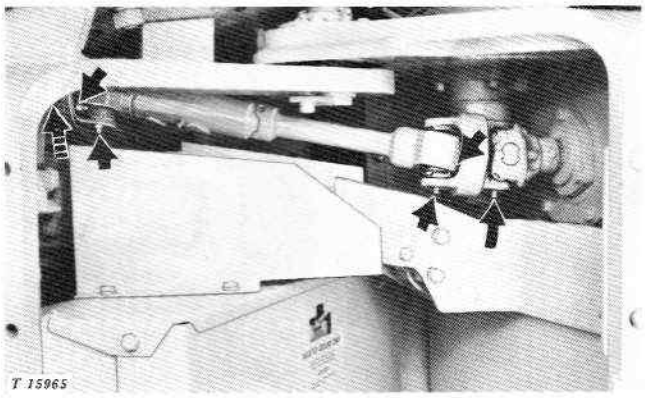
NOTE: It is not necessary to drain the transmission oil when replacing the filter element, except at 1000 hour intervals. If the element is changed quickly, oil loss will be slight.



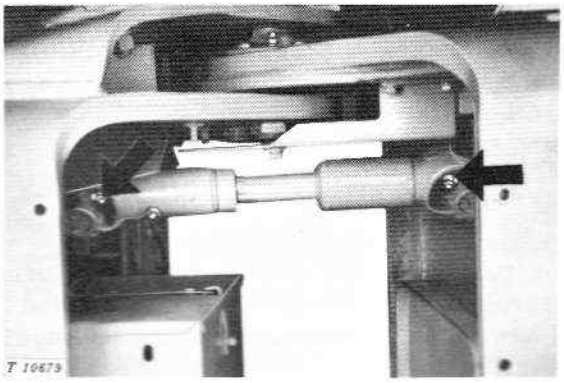
Replacing Oil Filter

Remove the oil filter cover and pull out the filter element. Install new filter element and replace gasket. Install and tighten the filter cover to 55 ft-lbs torque.

30. WINCH DRIVE LINE UNIVERSAL JOINTS



Winch Drive Universal Joint Grease Fittings (6) (Units with Power Shift Transmission)



Winch Drive Universal Joint Grease Fittings (2) (Units with Syncro-Range Transmission)

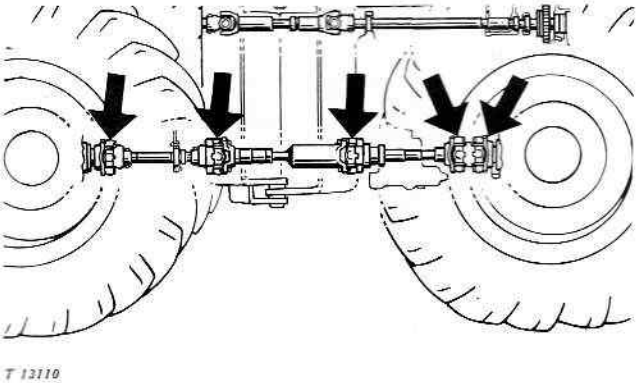
Every 250 hours of operation, lubricate the two winch drive universal joints (arrows) with one or two shots of SAE multipurpose grease. *Avoid heavy pressure on lever of grease gun.*

NOTE: Lubricate daily when operating in deep mud or water.

31. LOWER DRIVE LINE UNIVERSAL JOINTS

Lubricate the five universal joints on the lower drive line every 250 hours of operation. Use one or two strokes of grease gun containing SAE multipurpose grease. **Avoid high pressure.**

Two of the universal joints are located directly behind the front differential housing as shown. Two are located at each end of the telescoping drive shaft and one is located at the front of the rear differential.

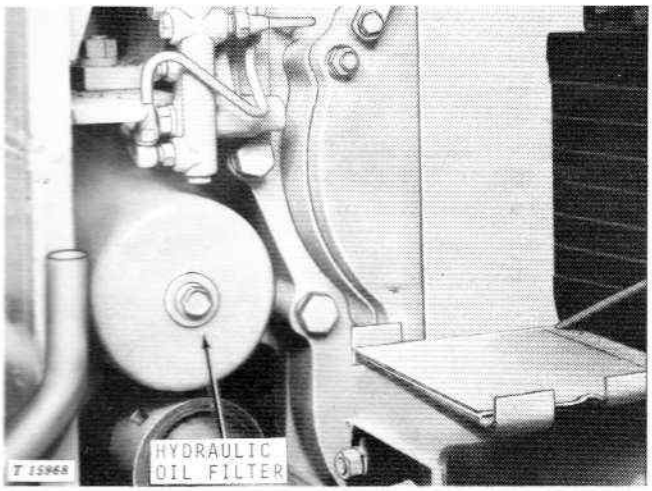


Lower Drive Line Universal Joint Grease Fittings

NOTE: Lubricate daily when operating in deep mud or water.

EVERY 500 HOURS

32. HYDRAULIC FILTER (POWER SHIFT)



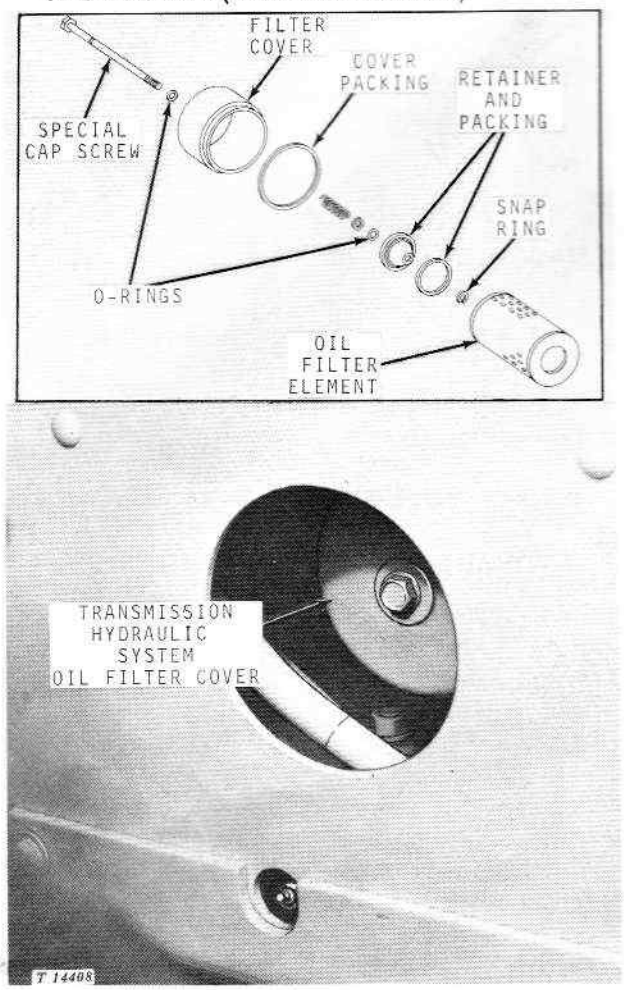
Hydraulic Oil Filter

Every 500 hours replace the hydraulic oil filter. To replace the hydraulic oil filter, part of the battery box must be removed. Remove the top and side panels. Remove connections from left battery. Lift out the left side rear panel of the battery box and the battery.

Install new filter element and replace filter cover gasket. Install and tighten the filter cover. Do not overtighten.

NOTE: It is not necessary to drain the transmission oil when replacing the filter element, except at 1000-hour intervals. If the element is changed quickly, oil loss will be slight.

33. TRANSMISSION AND HYDRAULIC SYSTEM OIL FILTER (SYNCRO-RANGE)

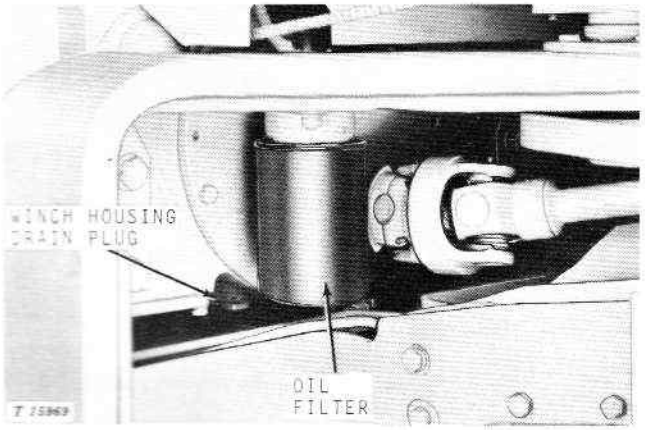


Transmission-Hydraulic System Oil Filter

Every 500 hours, replace the transmission-hydraulic oil filter. With the engine stopped, remove the oil filter cover and pull out the oil filter element. Install new filter element and replace filter cover gasket. Install and tighten the filter cover. Do not overtighten.

NOTE: It is not necessary to drain the transmission oil when replacing the filter element, except at 1000-hour intervals. If the element is changed quickly, oil loss will be slight.

34. WINCH HOUSING AND OIL FILTER



Winch Housing Drain Plug and Oil Filter

Every 500 hours of operation, remove the winch housing drain plug (shown) and drain the old oil. Replace the drain plug. While oil is draining, replace the spin-on filter. Then add new oil to level of oil level hole. The winch housing has a 9 U.S. quart capacity. Refer to the lubrication chart (page 30) for type of lubricant to use.

To remove winch filter element, turn it counterclockwise. Discard old element and install new element, making sure new sealing ring is inserted in groove of element. Apply a thin film of oil to sealing ring. Spin element clockwise by hand until sealing ring just touches mounting pad and then turn an additional 1-1/2 turns. Check for leaks and retighten if necessary. Do not overtighten.

CAUTION: The filter element has a special bypass valve. Replace only with a genuine John Deere filter element supplied by your John Deere dealer.

35. FUEL TRANSFER PUMP SEDIMENT BOWL

Every 500 hours, clean fuel transfer pump sediment bowl and strainer. See page 47.

36. FIRST STAGE FUEL FILTER

Replace first stage (front) fuel filter every 500 hours. Then bleed air from filter before operating engine. See page 46.

37. INJECTION PUMP AND NOZZLES

See your John Deere dealer for this service.

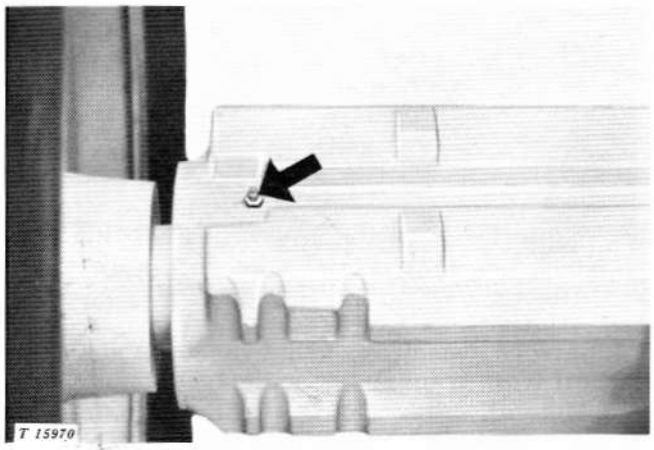
38. ENGINE VALVE TAPPETS

Check valve clearance every 500 hours. See page 52 for details, or see your John Deere dealer for this service.

39. AIR INTAKE HOSES

Check air intake hoses for cracking or rotting and replace any that seem questionable. Be sure clamps are tight.

40. AXLE BEARINGS



Axle Bearing Plug

Lubricate the four axle bearings every 500 hours of operation. Lubricate with 6 to 8 shots from grease gun using SAE multipurpose grease.

IMPORTANT: Lubricate axle bearings daily when operating in deep mud or water. Lubricating is not recommended in temperatures below 0°F. as axle outer seals may be forced out of position. If seal is unseated, tap back to original position. Do not use power grease gun.

41. ENGINE SPEEDS

Warm up engine and use tachometer to check speeds. Refer to the following chart.

Throttle Positions	Throttle	Load Speed	No Load Idle Speed
Up	Hand	. . . . .	800 rpm
Down	Hand	2500 rpm	2660 rpm
Pedal Down	Foot	2500 rpm	2660 rpm

If engine speeds need adjustment or if you doubt the accuracy of the tachometer, consult your John Deere dealer.

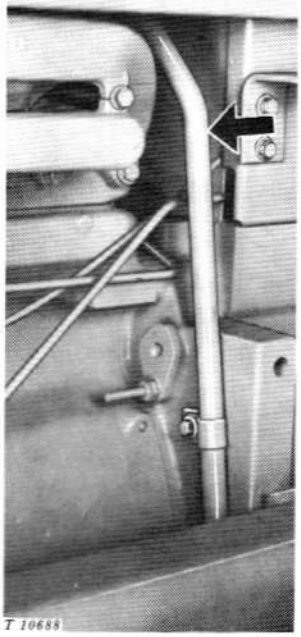
42. REPLACING BACKHOE RETURN OIL FILTER (SYNCRO-RANGE)

Backhoe Return Oil Filter

NOTE: During break-in, replace the hydraulic return oil filter after the first 200 hours of operation. After that, replace the filter every 500 hours.

Remove oil filter cover and pull out rubber packing and element. Install new packing in groove in filter housing. Be sure packing is fully seated. Install new filter element and the filter cover. DO NOT OVERTIGHTEN.

43. ENGINE CRANKCASE VENT TUBE



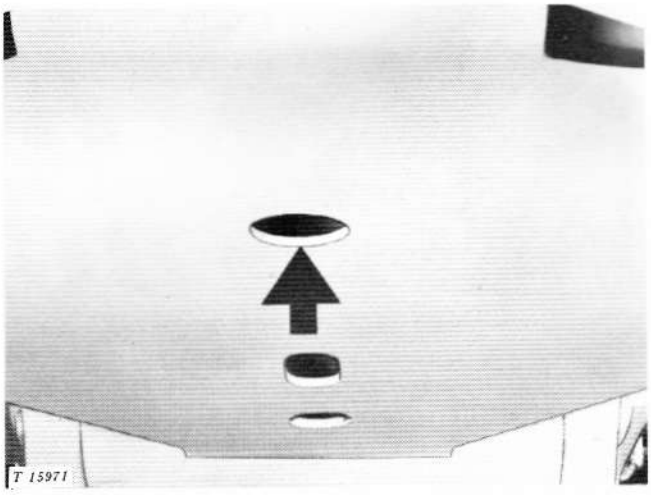
Engine Crankcase Vent Tube

Service crankcase vent tube every 500 hours or more often if skidder is operated in unusually dusty conditions. Remove the tube and clean out with diesel fuel. When installing the tube, be sure packing is secure in groove in engine tappet cover bore.

EVERY 1000 HOURS

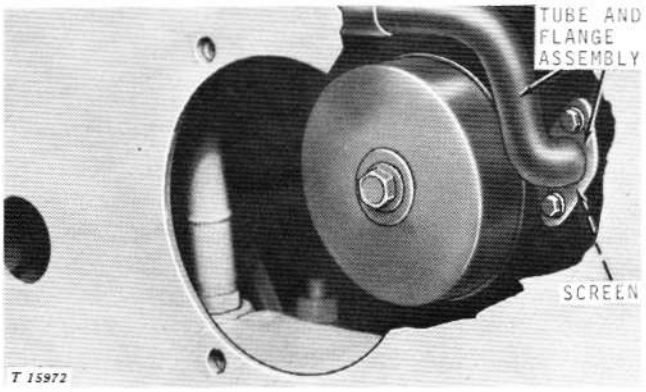
44. TRANSMISSION AND HYDRAULIC SYSTEM

Power Shift Transmission



Transmission Drain Access Hole

Remove the drain plug (arrow) and drain oil from transmission. Replace drain plug. Replace oil filter elements while transmission is draining. See Item 29 on page 38, Item 32 on page 39 and Item 42 on page 41.

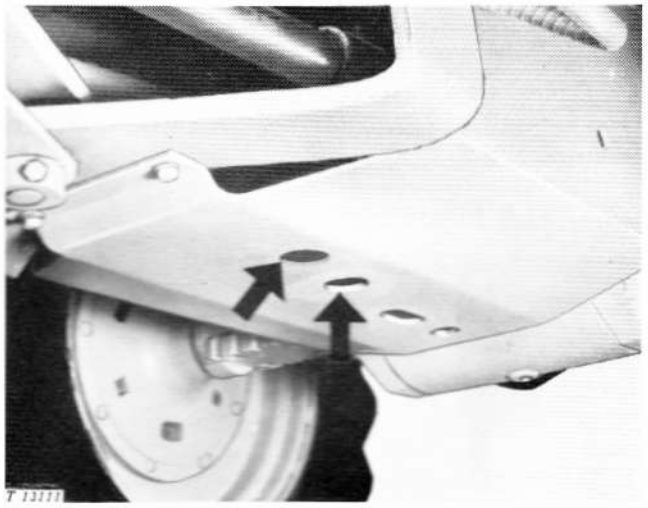


Transmission Pump Intake Screen Cover

Clean the transmission pump intake screen after every 1000 hours of operation. Screen is located next to the transmission oil filter (shown above). Loosen clamps on coupling and remove tube and flange assembly. Then remove the intake screen and clean in diesel fuel. Reinstall the screen and cover assembly.

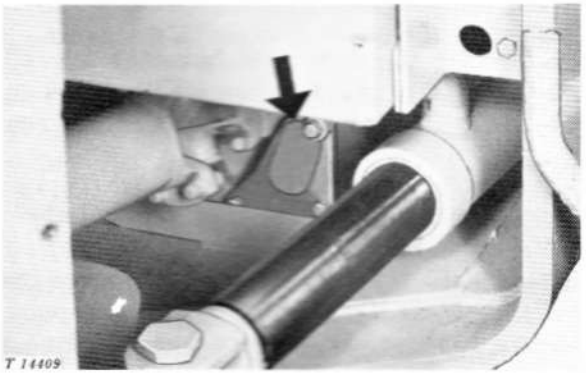
Add 9 U.S. gallons of John Deere Type 303 Special Purpose Oil or its equivalent to bring transmission oil level to the top mark on the bayonet oil gauge with the gauge resting on the top threads of filler pipe.

Syncro-Range Transmission



Transmission Drain Access Holes

Remove two drain plugs (arrows) and drain old oil from transmission. Replace drain plugs. Replace oil filter element while transmission is draining. See Item 33 on page 40.



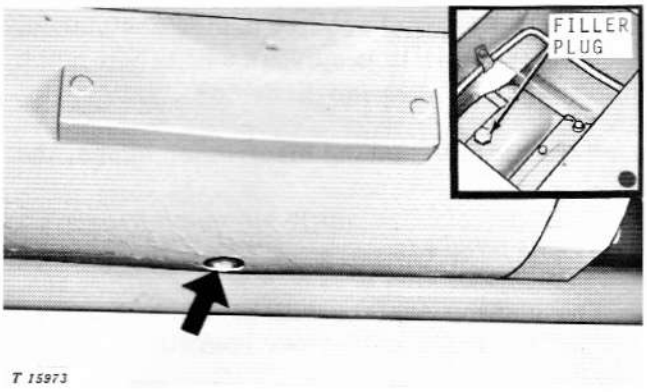
Transmission Pump Intake Screen Cover

Clean the transmission pump intake screen after every 1000 hours of operation. This screen is located in the lower right rear of the transmission case. Remove the pump intake screen cover (shown above). Then remove the intake screen and clean in diesel fuel. Reinstall the screen and cover.

Add 8 U.S. gallons of John Deere Type 303 Special-Purpose Oil or its equivalent to bring the oil level to the top mark on the bayonet oil gauge with the gauge resting on top threads of filler pipe.

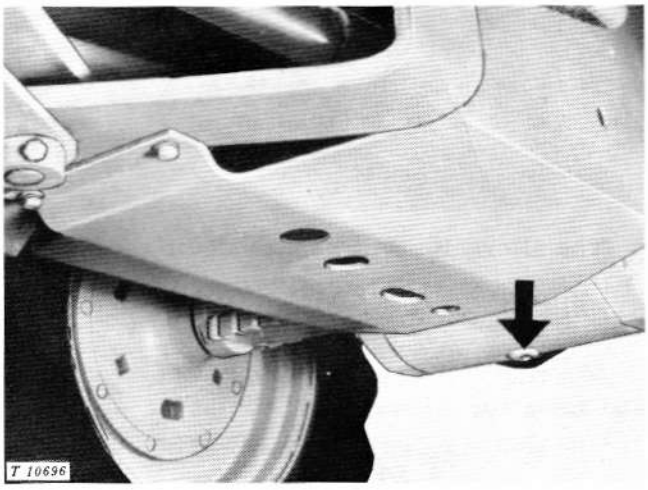
45. DIFFERENTIAL HOUSINGS

After every 1000 hours of operation, drain and replace the oil in the front and rear differential housings.



Rear Differential Housing Drain and Filler Plugs

Refill the rear differential housing with 4-1/2 U.S. gallons of John Deere Type 303 Special-Purpose Oil. Rear differential housing with lock requires 9 U.S. gallons. The rear differential filler plug is located on the top right side of the housing.



Front Differential Drain Plug

Refill the front differential housing with 9 U.S. gallons of John Deere Type 303 Special-Purpose Oil at the filler hole. The front differential filler plug is located on the top left side of the housing (see page 38).

46. STARTER

After every 1000 hours of operation, remove starter. Remove the pipe plugs (on engine side of starter) and saturate the wicks with engine oil. Install starter.

47. HYDRAULIC PUMP

See your John Deere dealer for this service.

EVERY SPRING AND FALL

48. COOLING SYSTEM

For cooling system service see page 51.

49. ENGINE CRANKCASE

Drain and refill the engine crankcase with new oil of the proper type and viscosity to conform with expected temperature conditions. Replace the crankcase filter element. Total crankcase capacity is 9 U.S. quarts. See Item 25 for details.

NOTE: Perform this service only if 250 hour service has not been performed during the previous three-week period.

50. ACCUMULATORS

For accumulator service see your dealer.

ANNUALLY

51. AIR CLEANER

Once each year replace the filter element. Also replace element if damaged or if element is not responding to cleaning. See page 32 for details.

52. SECOND STAGE FUEL FILTER

Once each year or at major overhaul, whichever occurs first, replace the second stage diesel fuel filter. Also clean the bowl and bleed the filters. See page 46 for details.

DEALER SERVICES

Your John Deere Industrial Dealer offers complete JD440 Series-A Skidder service. His personnel are factory-trained in servicing John Deere equipment and have access to accurate, detailed service information.

Several of the detailed periodic services recommended in this manual require dealer assistance. Consult him at these intervals and at other times during the year to keep your unit in top-notch operating condition.

The services your John Deere Industrial Dealer offers include, among many other things, the following:

ENGINE TUNE-UP

Your skidder will be given a complete engine tune-up.

FUEL INJECTION PUMP

Fuel injection will be timed for the engine and proper adjustments will be made. The pump will be inspected for malfunction if necessary.

FUEL INJECTION NOZZLES

The nozzles will be cleaned and tested for proper injection.

ENGINE SPEEDS

Engine speeds will be checked and adjusted.

OIL PRESSURE

Oil pressure will be checked and adjustments made if necessary.

COOLING SYSTEM

The cooling system will be flushed and inspected for leaks and proper operation.

FUEL SYSTEM

The fuel system will be cleaned and inspected.

HYDRAULIC SYSTEM

The hydraulic system will be inspected for leaks and proper operating characteristics.

BRAKES

The brakes will be inspected for proper operation and adjusted if necessary.

ELECTRICAL SYSTEM

The alternator will be serviced if necessary.

STEERING

Steering will be checked for proper operation and adjusted, if necessary.

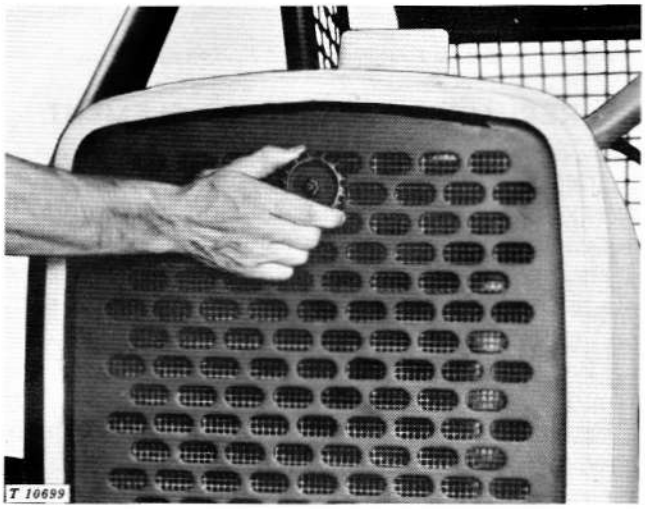
SERVICE

The instructions on the following pages will help you keep your skidder performing efficiently and economically. For additonal service and genuine parts, consult your John Deere dealer.

REMOVING COMPONENTS

To perform some of the services on the following pages it will be necessary to remove the hood, grille, and engine side shields.

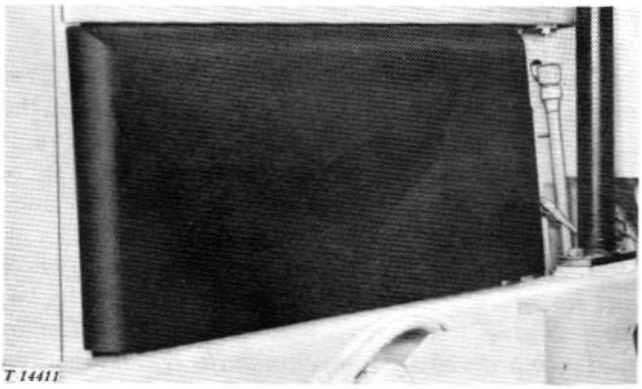
REMOVING GRILLE



Removing Grille

To remove the grille, unscrew the knob on the top center of the grille and lift out grille. The grille screen can be removed from the grille by removing the grille knob.

PIVOTING OR REMOVING ENGINE SIDE SHIELDS

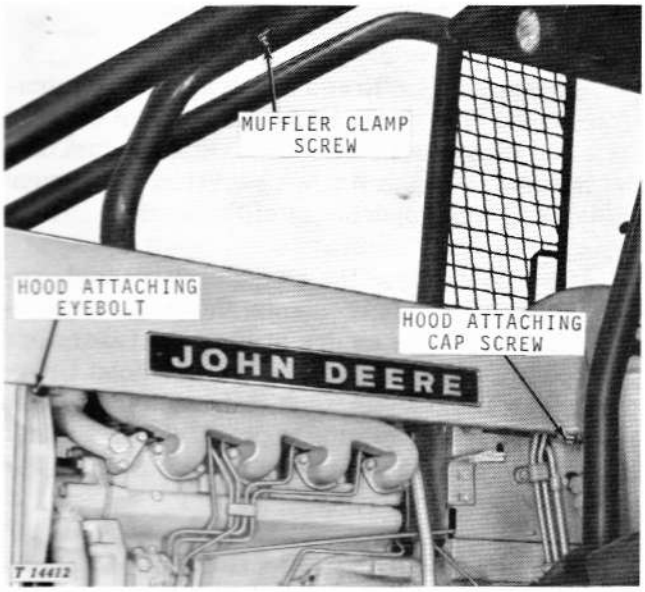


Engine Side Shields

To pivot out the shield for access to engine, do the following: Pull down on the latch at the back side of the shield. Slide the shield toward the rear until the latch pin fits into the rear hole of the bracket. The shield will now swing out for access to the engine.

To remove the shield, hold down latch and lift off shield.

REMOVING HOOD



Hood Attaching Points

Detach muffler from both exhaust stack and canopy and then remove exhaust stack.

Loosen nuts and unhook hold-down at front of hood. Remove cap screws from rear of hood on each side.

Spread hood slightly at the front and lift off.

DIESEL FUEL SYSTEM

Alteration or modification of the injection pump, the injection pump timing, or the fuel injection nozzles in ways not recommended by the manufacturer may affect the dealer's warranty obligation to the purchaser. See "Information About United States and Canadian Warranty" on the inside back cover of this manual.

INSPECTION AND CLEANING

Inspect the glass sediment bowl on the first stage fuel filters daily or after every 10 hours of operation. Most water and dirt will collect in the bowl. Remove and clean the glass bowl and wire screen as necessary.

If excessive water was found in the filter sediment bowl, drain all water from the fuel tank, fuel pump, and filters to prevent clogging of the filters. A sump with drain is provided on the bottom of the fuel tank to collect any sediment or moisture in the fuel.

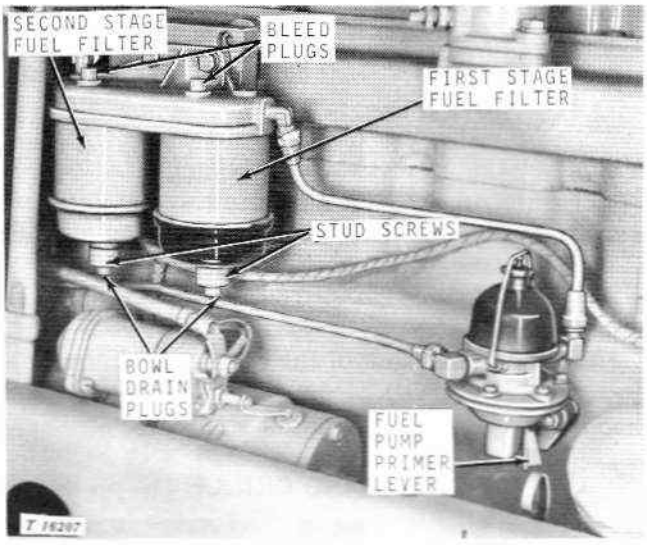
Improper fuel storage may cause contamination of the fuel system. Check the fuel storage tank and other fuel containers. Fill the fuel tank at the end of each day's operation to prevent moisture from condensing in the system.

After correcting the cause of dirty fuel, replace the fuel filter elements and clean the sediment bowls and strainers at both the filters and fuel pump. If necessary, have your John Deere dealer clean the fuel tank, injection pump, and injection nozzles. Before operating the skidder bleed the entire fuel system to remove air. See at right.

DRAINING DEPOSITS FROM FILTER SEDIMENT BOWLS

Loosen drain plug under first stage filter bowl and work primer lever on fuel pump until deposits are drained out. Retighten plugs finger tight. Leave primer lever at lowest point of stroke.

If it is necessary to drain bowl on first stage filter, also drain any deposits from bowl on second stage filter in the same manner.



Diesel Fuel Filters and Fuel Pump

REPLACING FUEL FILTER ELEMENT

Replace the first-stage (front) filter element every 500 hours of operation or more often if necessary. If the first stage element is extremely dirty or water-soaked, also replace the second stage filter element. Otherwise, replace the second element once each year.

Back off large screw under filter bowl and remove bowl and stud. Remove and discard filter element and sealing rings. Wash out sediment bowl in diesel fuel and dry it. Place new sealing rings in groove in filter head and on inner rim of sediment bowl (be sure screen is down on inner edge of bowl). Slip new element under filter head and reinstall bowl and stud. Be sure sealing rings are not crimped and tighten stud screw until snug. Also be sure drain plug in end of stud is tight.

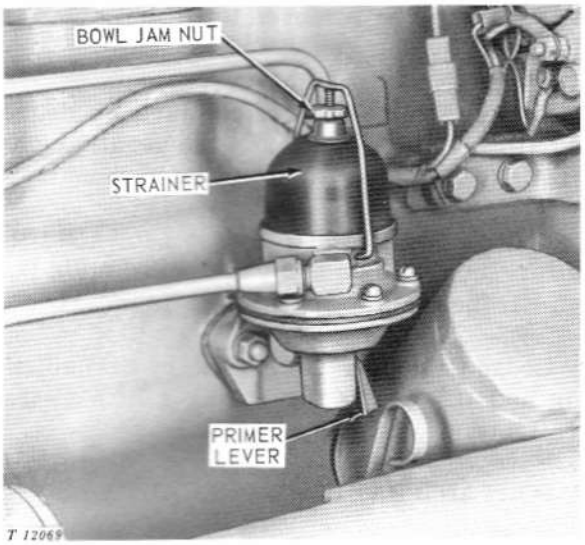
After replacing a fuel filter element, always bleed air from both of the filters.

BLEEDING FUEL SYSTEM AFTER FILTER CHANGE

Loosen the bleed plug on top of the first stage (front) filter. Work the primer lever on the fuel pump until a solid stream of fuel (free of air bubbles) flows from the filter opening. Tighten the plug. Repeat this operation for the second stage filter.

NOTE: If the primer lever will not pump fuel and no resistance is felt at upper end of stroke, turn engine with starter to change position of fuel pump drive lobe on camshaft. When bleeding is completed, be sure to leave primer lever at lowest point of stroke.

CLEANING FUEL PUMP BOWL AND STRAINER



Fuel Pump and Sediment Bowl

Loosen jam nut on fuel pump bowl and remove bowl and gasket. Lift strainer from pump center tube. Wash bowl and strainer in diesel fuel and dry with compressed air. Swab out top of fuel pump housing with a clean cloth. Install strainer on center tube. Use a new bowl gasket on inside rim of pump. Install bowl, position wire bail and, with bowl loose, work pump primer lever until bowl fills with fuel. Tighten jam nut on bowl finger tight. Be sure to leave primer lever at lowest point of stroke.

FUEL INJECTION NOZZLES

Whenever faulty or dirty injection nozzles are indicated by abnormal engine operation, see your John Deere dealer.

CAUTION: Do not attempt to remove and disassemble injection nozzles, as special tools are required.

SERVICING FUEL INJECTION PUMP

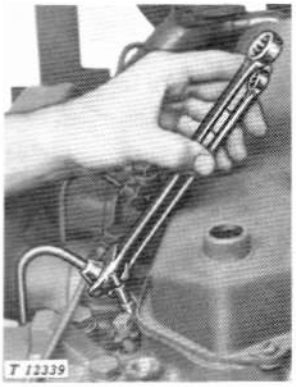
Every 500 hours of operation, have your John Deere dealer check the static and advance timing of the injection pump with his special equipment.

CAUTION: Never steam clean or spray water on a warm injection pump. This could cause seizure of pump parts.

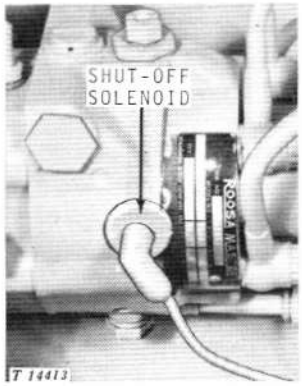
BLEEDING THE ENTIRE FUEL SYSTEM

Any time the engine has been idle for a long period or the fuel system has been cleaned, bleed the fuel system before operation to remove trapped air:

1. Fill tank with proper fuel.



Loosening Fuel Injection Lines



Shut-off Solenoid

2. Loosen bleed plugs on top of the filter. Pump primer lever until a solid stream of fuel (free of air bubbles) flows from the openings. Tighten plug.

3. Disconnect shut-off solenoid lead. Loosen solenoid approximately one turn. Pump primer lever until a solid stream of fuel (free of air bubbles) flows from opening.

4. Tighten solenoid and connect solenoid lead.

NOTE: Only if the system has been run dry will it be necessary to "crack" the injection lines at the nozzles.

If loosening nozzle lines is necessary, use only one hand and two wrenches to tighten or loosen the nozzle nuts to avoid bending the inlet lines. Tighten lines only until snug and free of leaks.

CAUTION: Loosen injection line nuts only one turn to avoid excessive spray.

5. Be sure to leave primer lever at lowest point of stroke.

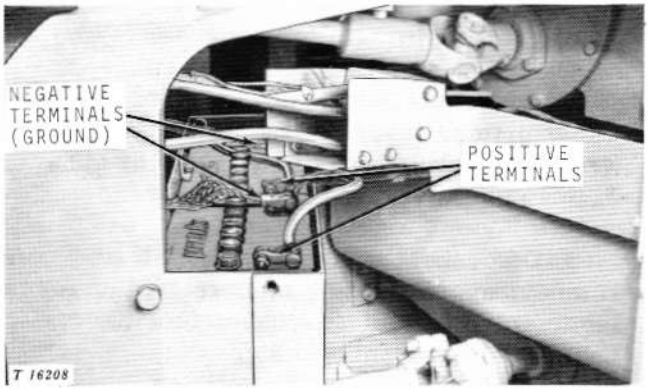
ELECTRICAL SYSTEM

BATTERIES

Your skidder is equipped with two 70-ampere batteries mounted in parallel. When replacing batteries, use two 12-volt, 66-plate, SAE 2STA tractor-type batteries having a capacity of 70 ampere-hours. The AABM group symbol for these batteries is 24T. The maximum dimensions of a replacement battery are: 10-1/4 inches long, 6-13/16 inches wide, and 9-7/8 inches high.

Original batteries are guaranteed for 90 days against defects in workmanship and material. Register the batteries to obtain protection for an additional period of time. See your dealer for service or replacement.

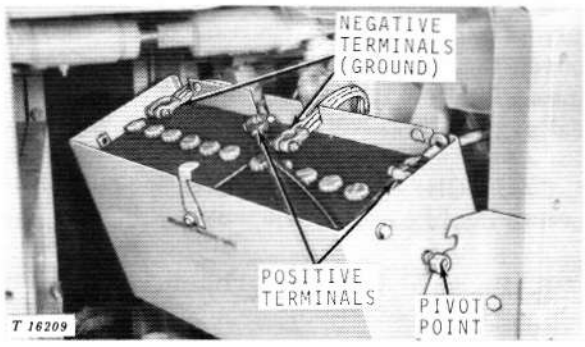
SKIDDERS WITH POWER SHIFT TRANSMISSION



Batteries and Connections

The top and side battery box panels must be removed to slide the batteries out.

SKIDDERS WITH SYNCRO-RANGE TRANSMISSION



Batteries and Connections

The battery box can be tilted out for servicing, but must be removed to lift batteries from the box.

Pull up lid release latch, turn 90 degrees, and lift off lid. Disconnect the negative ground terminal first, then the positive terminal.

Loosen the two pivot point nuts and tilt out battery box. Attach hoist to the two pivot points and lift the battery box free of its mount.

Loosen clamp holding battery in the battery box and lift out battery using a lifting strap if available.

IMPORTANT BATTERY PRECAUTIONS

Disconnect negative ground strap before working on any part of the electrical system or engine.

Disconnect positive terminals before charging batteries to avoid damaging alternator or regulator.

Gas from electrolyte is flammable. Keep batteries away from sparks or fires.

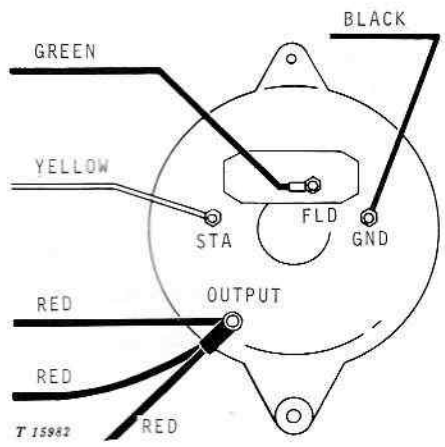
Do not use a battery charger as a booster to start the engine.

CHECKING SPECIFIC GRAVITY

A fully charged battery will have a corrected specific gravity reading of 1.260. Recharge battery if reading falls below 1.200 or half charge.

NOTE: Prevailing temperatures affect the potency of battery electrolyte. Therefore, make allowance for extreme climates. In tropical areas, use a 1.225 full charge reading. In cold regions use a 1.280 full charge reading.

ALTERNATOR AND REGULATOR



Alternator Connections

If for any reason the alternator wires are disconnected, connect them as shown above.

PRECAUTIONS FOR ALTERNATOR AND REGULATOR

When the batteries are connected, observe the precautions listed here. Failure to observe them will probably result in damage to the alternator, regulator, or both.

(1) Disconnect the negative ground strap when working on or near the alternator or regulator.

(2) NEVER ATTEMPT TO POLARIZE THE ALTERNATOR OR REGULATOR.

(3) If either the alternator or regulator wiring is disconnected, be sure that it is properly connected BEFORE the batteries are connected (see illustration).

(4) The alternator field terminal or the field circuit between the alternator and the regulator must never be grounded under any circumstances.

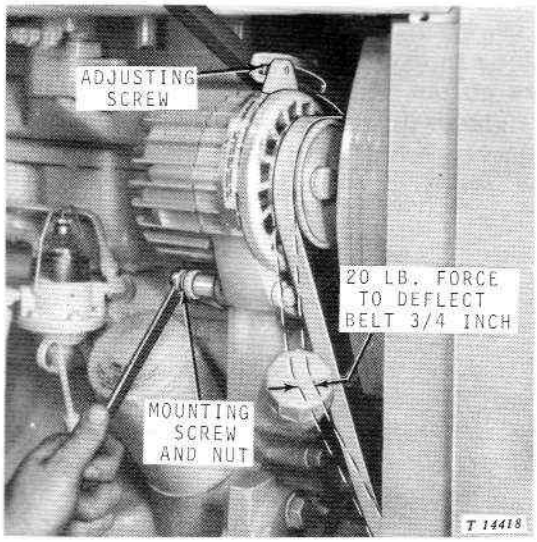
(5) The alternator output terminal must never be grounded under any circumstances.

(6) NEVER disconnect or connect any alternator or regulator wires with batteries connected or with alternator operating.

(7) Always connect batteries or a booster battery in the correct polarity. This is a NEGATIVE grounded electrical system. Do not use a battery charger as a booster to start the engine.

(8) Never disconnect the batteries when the engine is running and the alternator is charging.

ADJUSTING ALTERNATOR BELT TENSION



Adjusting Alternator Belt Tension

Check alternator belt tension every 250 hours of operation. Loosen the alternator bracket and adjusting cap screws and apply outward force to the FRONT alternator frame until a firm pull (20-pound force) on the belt midway between the pulleys will deflect the belt 3/4 inch.

CAUTION: Do not pry on the rear half of the alternator housing as this may misalign the complete alternator assembly.

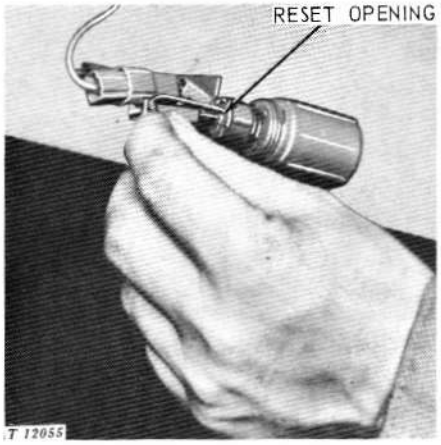
Inspect the belt periodically for wear or damage. If necessary, remove the old belt and replace with a new one.

LIGHTS

The headlights and rear light contain sealed-beam units. The dash lamp uses a single, white 12-volt, 6 candle power light bulb. If any of the sealed-beam lights burn out or the dash lamp burns out, see your John Deere dealer for replacement parts.

CIRCUIT BREAKERS

The wiring circuits for the lights and cigar lighter are protected by circuit breakers. If the lights go out while the light switch is on, turn the light switch off and wait one minute before turning back on. The lights circuit breaker will reset itself.



Resetting Cigar Lighter Circuit Breaker

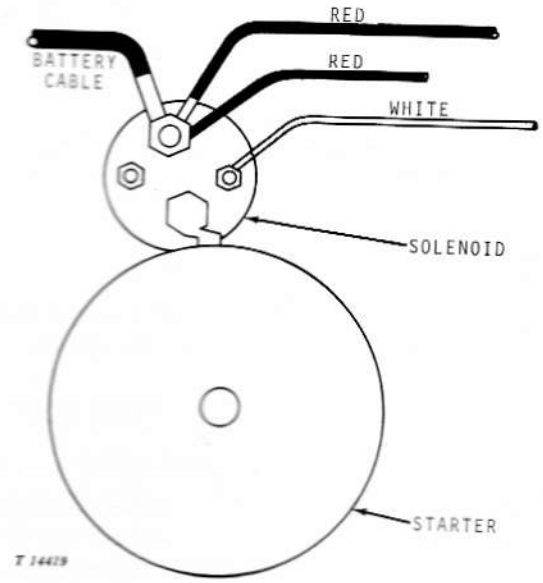
If the cigar lighter fails to operate, remove cowl rear panel for access. Then insert a wire in the small hole at the end of the lighter to reset the circuit breaker.

STARTER

The 12-volt electric starter is built to carry a big load for a short period of time. The electrical connection between starter and battery is made by a solenoid switch.

CAUTION: Never hold the starter button in start position for more than 30 seconds at a time. If the engine does not start within 30 seconds, allow at least two minutes for proper cooling of the starter. Pause a few seconds after a false start to be sure that the starter has stopped completely before another start is attempted.

STARTER-SOLENOID CONNECTIONS



Starter-Solenoid Connections

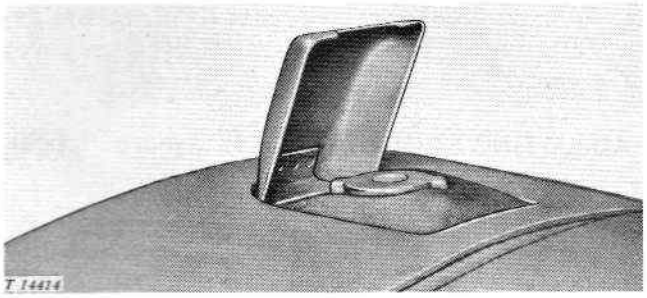
If the starter and solenoid wires and cables are disconnected, be sure to connect them as shown.

COOLING SYSTEM

The skidder is equipped with a pressure cooling system. This system will not operate properly unless the system is tight with no loose connections or leaks. Otherwise, pressure will not be maintained, and loss of water and overheating will result.

Proper operating temperature is maintained by means of a thermostat located in the water outlet manifold.

The pressure valve in the radiator filler cap is set to release when the pressure in the cooling system is 6-1/4 to 7-1/2 psi.



Radiator Cap

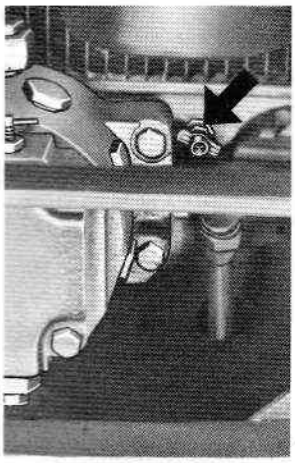
CAUTION: Do not remove radiator filler cap until the coolant temperature is below its boiling point. Then loosen cap to the stop to relieve pressure before removing cap completely.

CLEANING THE COOLING SYSTEM

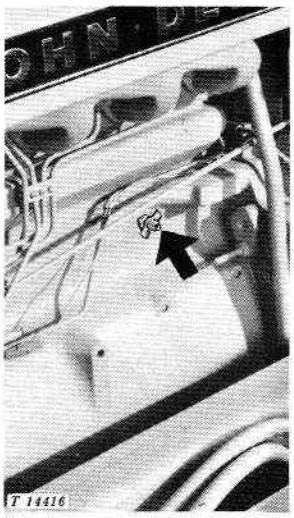
Clean the cooling system using a good radiator cleaning compound in accordance with instructions furnished with compound.

To drain the system completely, the radiator drain cock and cylinder block drain cock must be opened.

Remove the grille and examine all air passages in radiator core; remove all dirt and straighten bent fins.



Radiator Drain Cock



Cylinder Block Drain Cock

Use soft water to fill radiator whenever available. Well water often contains lime and other minerals which eventually may clog the radiator core and reduce cooling efficiency. As a rust inhibitor, add a can of John Deere Summer Engine Coolant Conditioner available from your John Deere dealer. Coolant level should be midway between the core and the bottom of the filler neck.

PREPARING FOR COLD WEATHER

Prior to cold weather, drain, flush, and fill the cooling system. Then add a permanent-type antifreeze solution. This type of antifreeze is resistant to evaporation when heated.

Run the engine until it reaches normal operating temperature. This allows thermostat to open and assures the solution is circulated throughout the entire cooling system.

Recheck cooling system for leaks after antifreeze solution has been added. Condition the system with John Deere Cooling System Stop Leak Pellets, available from your John Deere dealer.

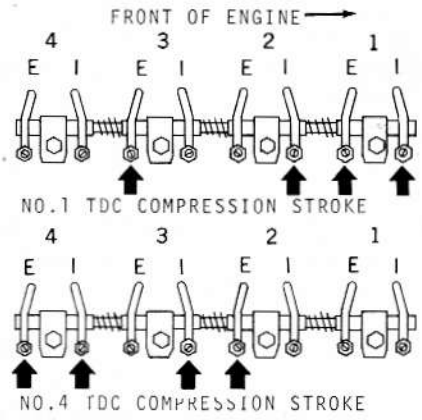
ADJUSTING ENGINE VALVE TAPPETS

Engine valve tappet clearance should be checked and adjusted if necessary, every 500 hours of operation.

Remove rocker arm cover and vent tube from engine.

Setting No. 1 Cylinder at "Top Dead Center"

The engine may be either hot or cold during valve adjustment. Adjust as follows: Set No. 1 (front) piston at "TDC" (top dead center) of its compression stroke by turning engine. Then remove the timing cover and screw from the flywheel housing and, reversing the screw, insert it into the flywheel housing hole as shown. Rock the flywheel until screw slides into hole in flywheel rim.



Adjusting Engine Valve Tappet Clearance

Adjust valve clearance on No. 1 and 3 exhaust and on No. 1 and 2 intake valves to clearances specified below. Using a feeler gauge to measure clearance, turn valve adjusting nut up or down until clearance is correct.

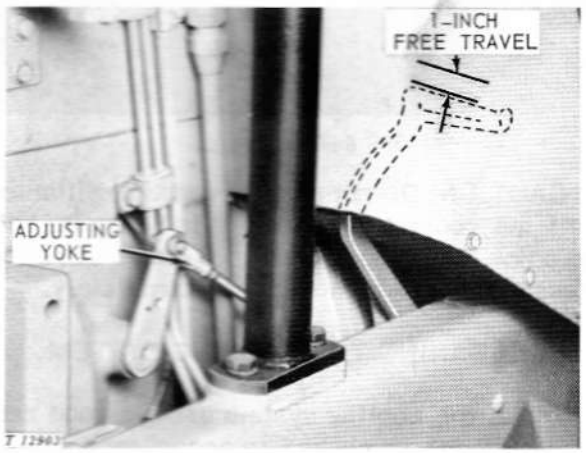
EXHAUST VALVES	0.018-inch
INTAKE VALVES	0.014-inch

Remove timing screw from flywheel. Rotate engine flywheel 360 degrees. Reinsert timing screw into hole on flywheel rim.

Adjust valve clearance on No. 2 and 4 exhaust and No. 3 and 4 intake valves to clearances specified.

Remove timing screw from flywheel and reinstall timing cover. Install rocker arm cover and vent tube.

ADJUSTING ENGINE CLUTCH (Syncro-Range)



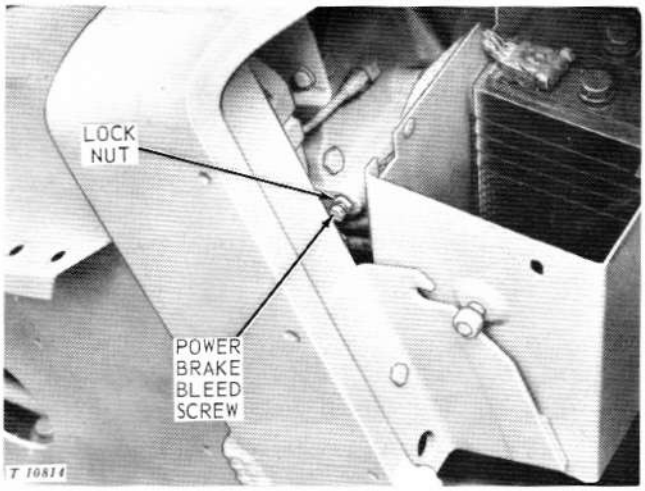
Adjusting Engine Clutch Pedal Free Travel

Readjust engine clutch whenever pedal free travel drops to 1/2 inch or less.

Remove cotter pin and pull pin from yoke on clutch arm, located on the left side of the clutch housing. Loosen jam nut and unscrew the yoke until the engine clutch pedal free travel reaches 1 inch at the pedal pad. Reinstall yoke on clutch arm using the pin and cotter pin. Tighten jam nut.

BLEEDING THE BRAKES

SKIDDERS WITH SYNCRO-RANGE TRANSMISSION



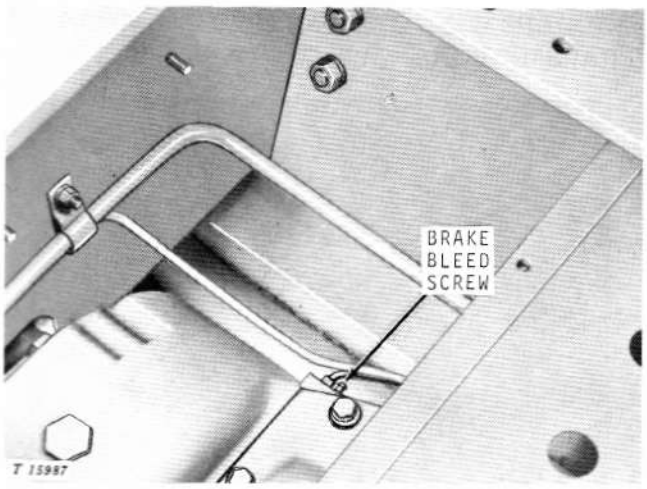
Brake Bleed Screw and Lock Nut

The brake bleed screw is located on the left rear corner of the brake piston housing.

CAUTION: Keep speed shifter lever in (P) park position and range shifter lever in neutral. Do not touch steering wheel during power brake adjustment.

Bleeding the brakes is a two-man job. Tilt out the battery box for access to the bleed screw. With the engine idling, loosen the bleed screw lock nut. Turn the bleed screw out two turns and tighten lock nut. Depress brake pedal for 2 minutes to bleed air from system. While the brake pedal is depressed the other man should loosen the lock nut and tighten the bleed screw. Tighten lock nut. Repeat this procedure until pedal has a solid feel and brake pedal travel does not exceed 5-1/2 inches free travel.

SKIDDERS WITH POWER SHIFT TRANSMISSION



Brake Bleed Screw (Total of Four)

The brake bleed screws are located on either side of the differential housing on both front and rear axles.

CAUTION: Keep transmission control lever in (P) park position. Do not touch steering wheel during brake adjustment.

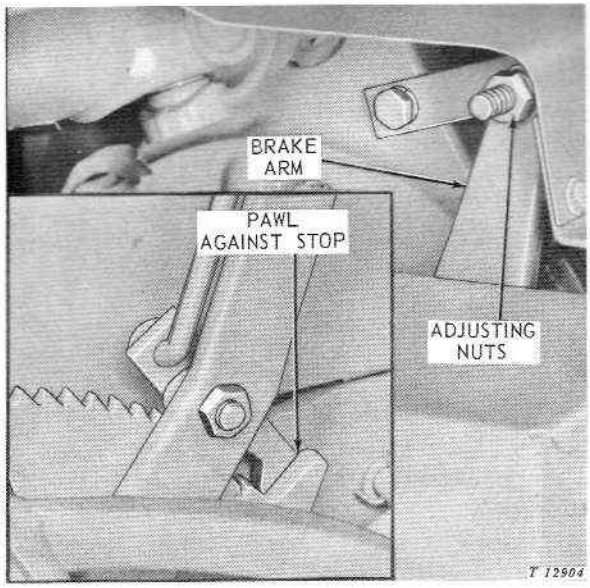
Bleeding the brakes is a two-man job. With the engine idling, one man should loosen the brake bleed screw a few turns while the other man depresses the brake pedal. While the brake pedal is depressed the brake bleed screw should be tightened so as not to draw air back into the system when the brake pedal is returned. Repeat this until oil flowing from bleed screw is free of air bubbles. Pedal should have a solid feel and brake travel should not exceed 5-1/2 inches free travel.

Service the remaining three brake bleed screws in this manner and check brakes accumulator (see page 54).

ADJUSTING WINCHING BRAKE

If winching brake lever free travel becomes excessive, adjust as follows:

SKIDDERS WITH SYNCRO-RANGE TRANSMISSION



Winching Brake Adjustment (Syncro-Range)

With the engine turned off, place the winching brake so that it is against the brake latch stop (see inset above).

Push the brake arm forward as far as it will go by hand and then tighten nut on operating rod until it is finger tight against brake arm (with arm in the forward position). Then loosen nut on brake operating rod 2-1/2 turns and lock with jam nut.

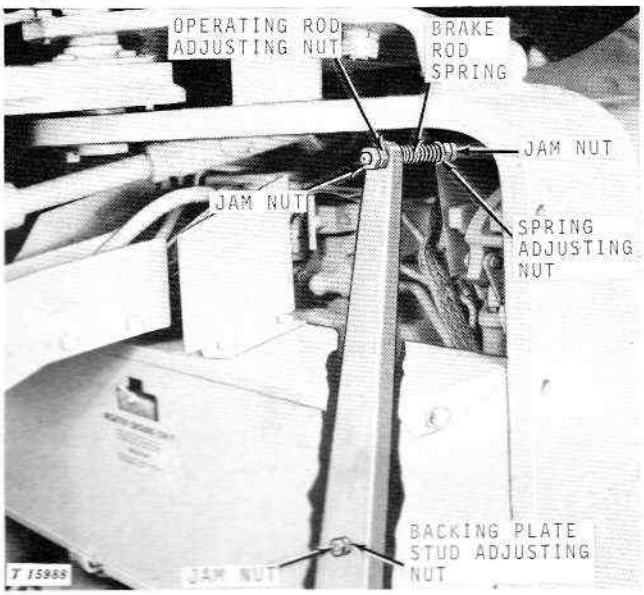
SKIDDERS WITH POWER SHIFT TRANSMISSION

1. Place winching brake lever so that it is forward against brake latch stop.

Push brake arm forward as far as it will go by hand. Loosen brake rod spring on shaft (see upper right). Tighten rear nut on brake rod finger tight to hold brake arm in forward position. Then loosen nut 2 turns and lock with jam nut.

2. Move brake arm completely rearward and tighten brake rod spring adjusting nut to hold spring at its free length. Tighten nut an additional four turns and lock with jam nut.

3. With rear backing plate stud rearward as far as possible, tighten adjusting nut finger tight and lock with jam nut.



Winching Brake Adjustment (Power Shift)

CHECKING ACCUMULATORS

SKIDDERS WITH POWER SHIFT

The accumulators store hydraulic oil under pressure for the extra pressure oil requirements of the brakes and some hydraulic equipment such as the rotoboom. The accumulators should be serviced by your dealer every spring and fall or whenever auxiliary equipment fails to function properly.

CAUTION: The accumulators are charged with nitrogen gas under pressure. Never disconnect hydraulic lines without first discharging accumulators.

Check brakes accumulator as follows:

1. With engine stopped and hydraulic accumulator (if used) discharged, step on brake pedal. Pedal action should feel firm with moderate effort and not have excessive travel.

2. If pedal travel is excessive or pedal action spongy, check brakes accumulator. Run engine for 1 minute and then stop it. Discharge hydraulic accumulator (if used) by turning steering wheel. Operate the brake pedal for 20 applications. Pedal action should be firm (with moderate effort) and free travel should not be excessive. See your John Deere Industrial dealer if accumulator is defective.

SKIDDERS WITH SYNCRO-RANGE

A hydraulic oil accumulator is provided when a backhoe or rotoboom is used with the skidder. The accumulator should be checked by your dealer every spring and fall season or whenever a failure is suspected.

TIRES

Check the tires for correct air inflation every 50 hours of operation or when necessary, and inspect them for possible breaks or cuts that may expose the tire fabric. Repair cuts or breaks immediately to prevent further damage. See tire inflation chart on page 19.

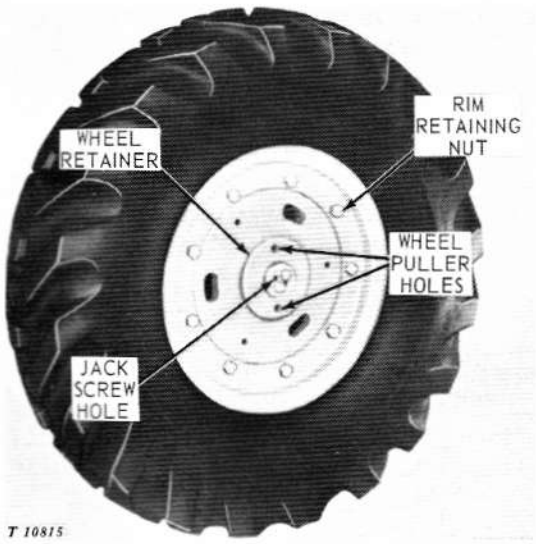
Protect the tires from exposure to oil, grease, fuel, bright sunlight, and chemicals (including those used for dusting and spraying). Careless driving over sharp objects shortens tire life.

WHEELS

Steel rims are bolted to cast disk wheels and are fastened to the axles by wheel retainers.

Rear wheel treads may be varied on skidders with short frames by reversing the offset rims on the wheels. See "Specifications" (page 2) for wheel treads.

REMOVING AND INSTALLING RIMS



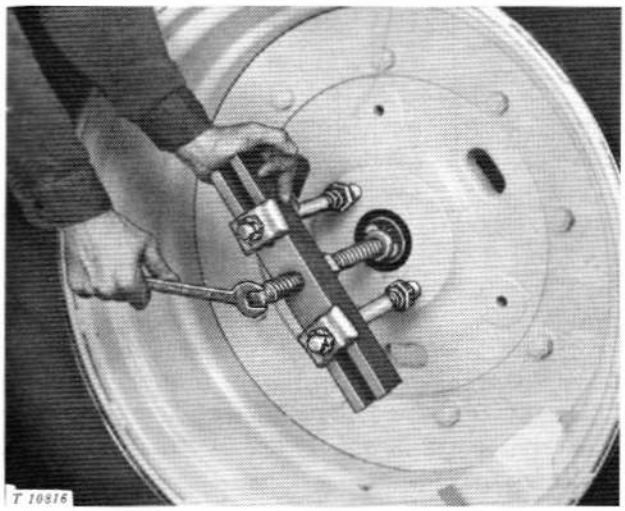
Wheel Retainers and Puller Holes

To remove the rim from the wheel, jack up the wheel and place blocks under the axle housing. Remove the rim retaining nuts and the rim. Exercise caution and use a hoist or other suitable means of lifting the rims and tires as they are heavy.

When installing the rim, guide the rim over the studs to prevent thread damage. Check for correct direction of tire rotation. Tighten the rim retaining nuts to 275 ft-lbs torque. Retighten the nuts after a few hours of service and keep them tight.

REMOVING WHEELS

Be sure jack is properly positioned and use safety blocking when removing the wheel. Remove the cap screws from the wheel retainer. Insert them in the jack screw holes and screw them in until the wheel retainer comes off.



Pulling Wheel from Axle

Use a large puller as illustrated and pull the wheels from the axle. Use caution when handling the heavy wheels. If desired, remove the rim and tire first to reduce the weight to be handled.

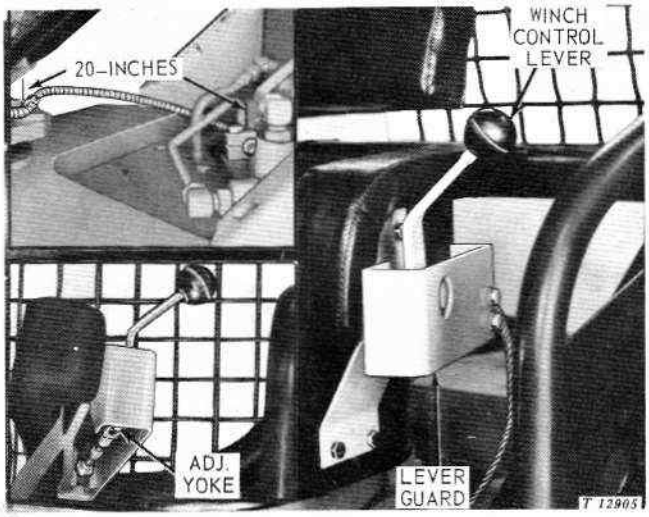
INSTALLING WHEELS

Install the wheel and the wheel retainer. Tighten the wheel retainer cap screws to 170 ft-lbs torque. Using a heavy hammer, rap the retainer and then retighten the cap screws. Repeat this procedure three times. Then, at 50-hour intervals, check and retighten the screws to be sure that they stay tightened to 170 ft-lbs torque.

3305 POWER WINCH ADJUSTMENTS

WINCH CONTROL LEVER ADJUSTMENT

NOTE: Always adjust the winch control lever before adjusting the winch brake.



Winch Control Lever Adjustment

Push the winch control lever all the way forward (pushing spool valve in to stop at winch). There should now be 1/2-inch clearance between the front edge of the lever and the top edge of the lever guard.

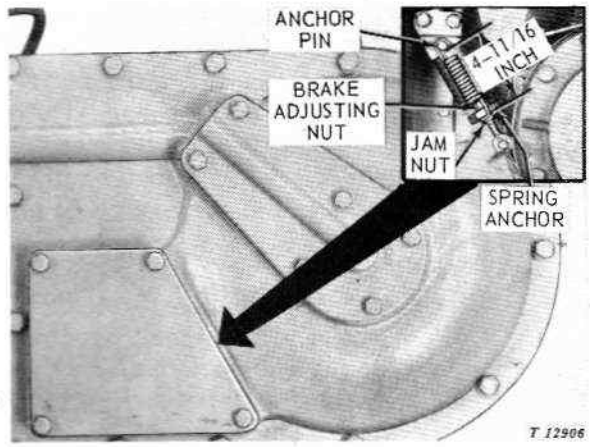
If adjustment is necessary, remove the pin and cotter pin from the control lever yoke (see inset). Back off jam nut and screw the yoke in or out to obtain 1/2-inch clearance. Retighten jam nut against yoke and connect yoke to lever.

IMPORTANT: If the winch control cable is removed or loosened for any reason, be sure to clamp cable so that there is 20 inches of cable sheath between the clamp on the hinge frame and the cable clamping groove.

WINCH BRAKE BAND ADJUSTMENT

If the winch brake band shows signs of slippage when the control lever is in the "HOLD" position, the winch brake band should be readjusted. Brake band slippage will cause excessive heat which will soon cause serious damage to the brake band. Before adjusting brake band, check winch control lever adjustment (see above right).

Inboard Tighten
outboard Loosen



Winch Brake Band Adjustment

Remove lower cover from winch left quill. Loosen the jam nut (see inset) and back off brake adjusting nut until band is loose. Then tighten brake adjusting nut until there is a distance of 4-11/16 inches between bottom edge of spring anchor pin and bottom edge of spring anchor as shown. Tighten jam nut and install cover.

Recheck operation of winch. If brake still slips, inspect brake band facings for damage from excessive heat or grease or oil soaking. Replace brake band facing if damaged.

ACCESSIBLE HARDWARE TORQUE VALUES

RECOMMENDED TORQUE IN FT-LBS
COARSE AND FINE THREADS

Bolt Diameter	Plain Head	Three Radial Dashes	Six Radial Dashes
1/4	Not used	10	14
5/16	Not used	20	30
3/8	Not used	35	50
7/16	35	55	80
1/2	55	85	120
9/16	75	130	175
5/8	105	170	240
3/4	185	300	425
7/8	160	445	685
1	250	670	1030
1-1/8	330	910	1460
1-1/4	480	1250	2060

STORAGE

If your skidder is to be put in storage for several months, these suggestions for storing it and removing it from storage will help to prevent excessive deterioration.

PREPARING UNIT FOR STORAGE

Remove and clean the air cleaner element (page 32).

For added protection use John Deere Internal Corrosion Inhibitor. Use the following procedure:

With engine warm, drain crankcase. Replace filter and fill crankcase with new oil of proper weight and quality (page 27).

Drain, flush, and refill cooling system (page 51).

Add 1 ounce of inhibitor for each 2 gallons of specified oil capacity to transmission-hydraulic system. With engine at slow idle, cycle the hydraulic functions to distribute inhibitor to all components.

Drain fuel tank. Add 6 ounces of inhibitor to fuel tank (10 ounces in 42 gallon tank).

Add 9 ounces of inhibitor to the crankcase.

Add 1/2 ounce of inhibitor to each cylinder. Put hand throttle in the slow idle position. Remove plug (or starting fluid adapter fitting if equipped) from air intake duct. Then squirt inhibitor into the duct. Turn engine over just a few revolutions so that engine will not start. If engine starts, repeat procedure. DO NOT start engine after adding inhibitor. Replace plug or starting fluid adapter fitting in air intake duct.

CAUTION: Inhibitor is a volatile compound. All openings must be sealed or taped after adding inhibitor. Keep container closed when not in use. Do not store equipment with dirty engine oil or hydraulic oil.

Wash the exterior and painted surfaces using clear, cold water and wipe dry with a soft cloth.

Remove and clean the battery and add water if necessary (page 37). Charge the battery and store in a cool, dry place where it will not freeze. Keep battery fully charged during storage.

Replace or repair worn or damaged parts. Between working seasons is a good time to paint your skidder. This can be done by your John Deere dealer at a nominal cost.

Store the skidder in a dry, protected place. If the unit is stored outside, cover it with waterproof protective material.

REMOVING THE UNIT FROM STORAGE

Remove all protective coverings. Unseal all openings in engine, electrical equipment and exhaust outlet.

Install battery and connect cable and ground strap (negative terminal grounded). Check alternator belt tension (page 49).

Check transmission and hydraulic system oil level (page 36).

See that fuel tank is filled (page 24).

Perform recommended 500-hour service (pages 30 and 31).

Operate the engine for a few minutes at 1000 rpm to make certain engine is in proper operating order before placing the skidder under full load.

CAUTION: Before starting the engine, be sure there is plenty of ventilation. Never operate the engine in a shed or garage.

TROUBLE SHOOTING

The following pages list difficulties that might possibly be encountered and their possible causes. If after checks are performed, the difficulty still exists, see your John Deere Industrial Dealer. He has factory trained mechanics and the latest technical literature and equipment to put your unit back in operating condition.

ENGINE HARD TO START-WILL NOT START

No fuel, or improper type fuel in tank.

Fuel pump primer lever left on upward end of stroke.
Push primer lever down.

Low battery output.

Resistance in starting circuit.
Clean and tighten battery and starter connections.

Crankcase oil viscosity too high.

Water, dirt, or air in diesel fuel system or clogged filters. Dirty or faulty injection nozzles.

ENGINE KNOCKS, RUNS IRREGULARLY OR STALLS FREQUENTLY

Insufficient crankcase oil.

Clogged air intake system.

Injection pump out of time.

Clogged fuel line filter.

Low coolant temperature.
Defective thermostat or too "cool" a thermostat.

Water, dirt, or air in diesel fuel system. Clogged filters or dirty or faulty injection nozzles.

LACK OF ENGINE POWER

Restriction in air intake system.

Clogged diesel fuel filters or dirty or faulty injection nozzles.

Crankcase oil viscosity too high.

Injection pump out of time.

High altitude operation.
Use proper type of fuel.

Overheated engine.
See "Engine Overheats."

Improper valve clearance.

ENGINE OVERHEATS

Low coolant level or defective radiator cap.

Radiator core or grille plugged.

Loose or defective fan belts.

Cooling system limed up.

Defective temperature gauge or sending unit.

BELOW NORMAL ENGINE TEMPERATURE

Defective thermostat.

Defective temperature gauge or sending unit.

LOW ENGINE OIL PRESSURE

Low crankcase oil level.

Clogged oil filter.

Oil leaks or engine overheating.

HIGH OIL CONSUMPTION

Crankcase oil viscosity too low.

Oil leaks or engine overheating.

HIGH FUEL CONSUMPTION

Improper type of fuel.
Clogged or dirty air intake system.
Dirty or faulty fuel injection nozzles.
Injection pump out of time.

ENGINE EMITS BLACK OR GRAY EXHAUST SMOKE

Improper type of fuel.
Clogged or dirty air intake or exhaust system.
Injection pump out of time or dirty or faulty injection nozzles.
Defective muffler.

DIESEL ENGINE EMITS WHITE SMOKE

Improper type of fuel.
Cold engine.
  Defective thermostat or too "cool" a thermostat.
Injection pump out of time.

TRANSMISSION OIL FILTER INDICATOR LIGHT GLOWS (Power Shift Transmission Only)

Clogged transmission oil filter element.
Low engine oil pressure.
  Check engine oil pressure gauge.

TRANSMISSION OIL OVERHEATS (Power Shift Transmission Only)

Low oil supply.
High oil level.
  Engage differential locks for 10 minutes.
  Check transmission level.
Oil cooler air passages clogged.
Clogged transmission oil filter.
Oil cooler bypass valve stuck open.
  See your dealer.

ENTIRE HYDRAULIC SYSTEM FAILS TO FUNCTION

Low oil supply.
Clogged transmission oil filter or dirt in hydraulic pump.
Hydraulic pump shut off.

HYDRAULIC OIL OVERHEATS

Low oil supply.
Oil cooler air passage clogged.

BATTERY WILL NOT CHARGE

Loose or corroded connections.
Sulfated or worn-out battery.
Loose or defective fan belt.
Alternator cut-in speed not reached.

STARTER INOPERATIVE OR CRANKS SLOWLY

Loose or corroded connections.
Low battery output.
Crankcase oil viscosity too high.
Pressure build-up in engine crankshaft-driven hydraulic pump.
  Turn steering wheel back and forth to relieve pressure.

BRAKE PEDAL FEELS SPONGY OR BOTTOMS WHEN ENGINE IS STOPPED

Air in system or bleed screw left open.
Loose hydraulic fitting(s).
Loss of brake accumulator gas charge (Power Shift).

LIGHTS OR CIGAR LIGHTER FAIL

Circuit breaker open.
  Turn off light switch and wait one minute. Circuit breaker will reset itself. Cigar lighter circuit breaker must be reset. See page 50.

WINCH BRAKE SLIPS OR DOES NOT DISENGAGE

Brake band out of adjustment.
Excessive heat in brake band.
Brake facing slick with oil or grease.

WINCH BRAKE DOES NOT DISENGAGE OR CLUTCH DOES NOT ENGAGE

Oil leaks.

INDEX

A

Page

Accumulator 54
Air Cleaner (as required) 32
(10-hour service) 33
Alternator 49
Alternator Indicator Light 4, 5, 6
Antifreeze 51
Auxiliary Power Drive Control Lever . . 18
Axle Bearings (500-hour service) 41

B

Battery 48
(50-hour service) 37
Belt, Alternator 49
Bleeding Fuel System 47
Bottom Guards 24
Brakes 4, 5, 14, 53
("as required" service) 33
Breakaway Couplers 23
Break-In Period 11, 28

C

Canopy 24
Cigar Lighter 50
Circuit Breaker 50
Clutch, Disconnect 5, 9
Clutch, Engine 52
("as required" service) 32
Clutch Pedal 4, 5, 52
Cold Weather Starting 9
Controls 4, 5
Cooling System 51
Crankcase (10-hour service) 33
(250-hour service). 37
Crankcase Vent Tube (500-hour service) 41

D

Dash Lamp 17
Dealer Services 44
Differential Lock(s) 14
Differential Housings (250-hour service) 38
(1000-hour service) 43
Disconnect Clutch 5, 9
Drawbar 19
Driving the Skidder 12

E

Page

Electrical Outlet Socket 17
Electrical System 48
Engine Coolant Heater 10
Engine Idling 8
Engine Operation 8
Engine Speeds 8
(500-hour service) 41
Engine Starting 8

F

Foot-Operated Throttle 4, 5, 8
Frame Steering Stop Pins 19
Front Blade 18
Front Blade Control Lever 4, 5, 22
Fuel 26
Fuel Filters (500-hour service) 40
Fuel Gauge 4, 5, 6
Fuel Injection Pump 47
(500-hour service) 40
Fuel Transfer Pump 46
(10-hour service) 34
(500-hour service) 40
Fuel System 46
Fuel Tank 26
Fuel Tank Filler Screen 26, 36
Fuel Tank Sump Drain 36

G

Gauges 6
Greases 27
Grille 24, 45

H

Hand Throttle 4, 5, 8
Hood 45
Hydraulic Pump Shut-Off Screw 10
Hydraulic System and Transmission
(50-hour service) 36
(250-hour service) (Power Shift) . . . 38
(500-hour service) 40
(1000-hour service) 42

I

Page

Indicator Lights 4, 5, 6
Injection Pump 47
Instruments 4, 5, 6

L

Lights 17
Lock(s), Differential 14
Log Arch 21
Log Bumper 21
Lubrication 27
Lubrication Intervals 28

O

Oil Specifications 27
Oil Filter, Backhoe Return 41
Oil Filter, Engine (250-hour service) . 37
Oil Filter, Transmission-Hydraulics
(250-hour service) 38
(500-hour service) 42
Oil Pressure Indicator Light 4, 5, 6
Operating Controls 4, 5
Operating Skidder 12
Overloading 13

P

Parking 15
Periodic Lubrication 28
("as required" service) 32
(10-hour service) 33
(50-hour service) 35
(250-hour service) 37
(500-hour service) 39
(1000-hour service) 42
(spring-fall service) 43
(annually) 43
Power Shift Transmission 12
Protective Equipment 24

R

Radiator
(10-hour service) 34
Rear Wheel Weights 19
Remote Cylinders 23

S

Safety Rules 25
Seat 18
Seat Belts 18
Service 45
Shifting Gears 12, 13
Shift Lever(s) 4, 5, 12
Side Shields 45
Specifications 2, 3
Speeds 14
Starter 50
Starter (1000-hour service) 43
Starting Fluid Adapter 9
Stopping Engine 11
Stop Pins, Frame Steering 19
Storing the Tractor 58
Syncro-Range Transmission 13

T

Tappet Adjustment 52
Temperature Gauge 4, 5, 6
Tire Inflation 19
Tires 19
Towing 16
Transmission Control Lever 12
Transmission and Hydraulic System
(50-hour service) 36
(250-hour service) 38
(500-hour service) 40
(1000-hour service) 42
Transmission-Hydraulic System Oil
Filter (500-hour service) 40
Transmission (Power Shift) 12
Transmission (Syncro-Range) 13
Travel Speeds 14
Trouble Shooting 58

V

Vent Tube, Crankcase (500-hour service) 41

W

Warm-Up 8
Weights, Rear Wheel 19
Wheel Retainers 55
(50-hour service) 30
Wheels 55
Winch 20
(10-hour service) 34
(50-hour service) 35
(500-hour service) 40
Winch Control Lever 4, 5, 20
Winch Adjustments 56
Winching Brake 15
Winching Brake Adjustment 54

NOTES

NOTES

NOTES

Transmission oil Change & filter - 2/9/82

INFORMATION ABOUT
UNITED STATES AND CANADIAN WARRANTY

The warranty on this equipment comes from your John Deere dealer and is contained in the purchase agreement you sign. If you are purchasing the equipment new, the dealer's warranty ordinarily contains the following provisions.

> He agrees to replace parts which prove defective with normal and proper use within TWELVE MONTHS from date of delivery to you.
>
> He has no obligation to replace parts whose failure is related to modification or alteration of this equipment in ways not recommended by the manufacturer. It is your obligation to bring the equipment to his service shop or, if this is not possible, to reimburse him for his travel expense in fulfilling the warranty.

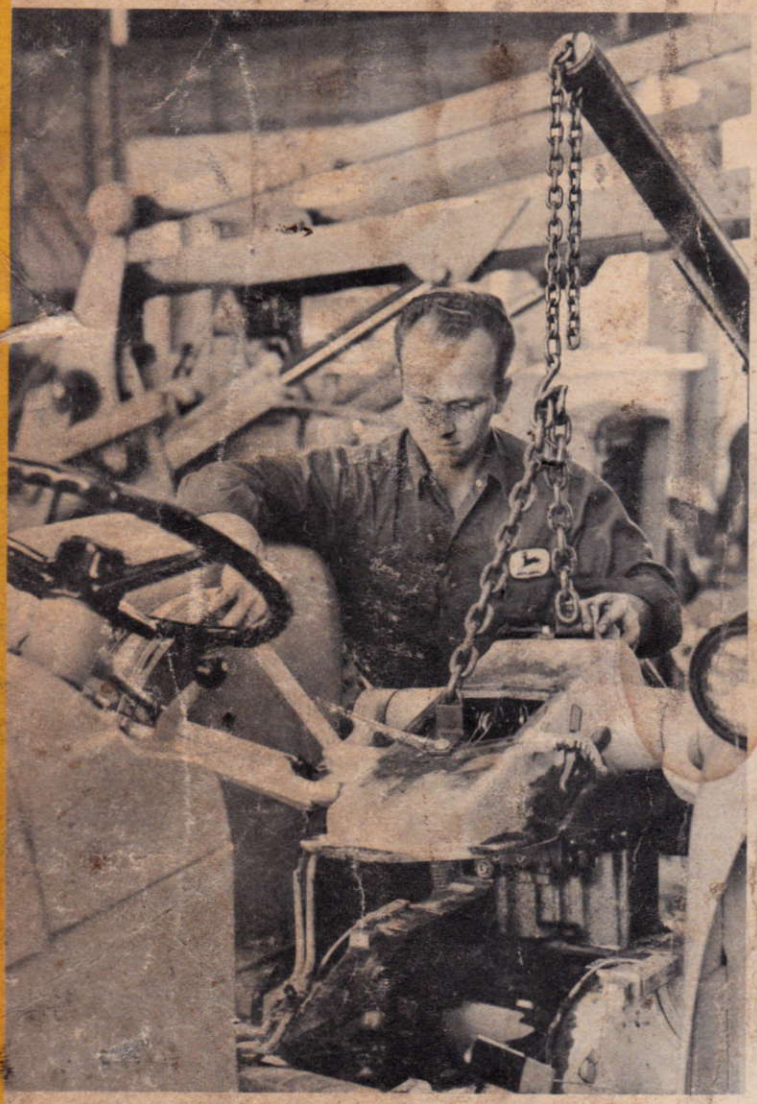
The dealer's warranty in the purchase agreement ordinarily does not cover batteries, rubber tires, radios, engines not of John Deere manufacture or used equipment, and there is no warranty or other obligation on such items unless your dealer has delivered to you a certificate or other written statement which is separate from the purchase agreement and is designated "Warranty."

Certain other limitations on the obligation of the dealer and of others may be contained in the warranty in your purchase agreement.

Be sure to read the "Warranty and Agreement" in your purchase agreement, or your separate "Warranty," as there is no other warranty obligation, express or implied, including the implied warranties of merchantability and fitness, on this equipment.

Note: The above summary of the provisions ordinarily found in the dealer's warranty was correct on the date of printing of this manual. The warranty you actually receive governs in case of any inconsistency with the summary.

Here's Dependable John Deere Service



Servicemen who know their Business

You can place full confidence in a John Deere Dealer's Serviceman. He's skilled . . . experienced . . . knows equipment inside-out.

Trained in servicing methods recommended by John Deere, these mechanics know what to do and how to do it; they keep up to date on methods, changes, and new machines.

This assures quality work . . . quickly and efficiently done . . . *the first time* . . . and at the lowest cost. Remember . . . you'll get your money's worth with John Deere Service!

Parts Departments well stocked to meet your needs

Having parts when you need them—that's the true test of good parts service!

That's also the aim of your John Deere Dealer. His parts department keeps a good supply of JD Parts at all times. Should he be temporarily out of stock, additional parts can be secured quickly . . . often overnight.

Most important, the *genuine* John Deere parts you get are made right . . . to fit properly . . . last longer . . . for continued, dependable John Deere performance.

Your John Deere Industrial Dealer - Home of Quality Service, Genuine John Deere Parts

LITHO IN U. S. A.